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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Progress in Benzole Research

THE sixth report of the Joint Research Committee of the National Benzole Association and the University of Leeds, presented at the annual meeting on May 15 and now published in a volume of 212 pages, is a record of the continuation of research work dealt with in previous reports. In the first place and occupying the principal position as regards intrinsic importance, is the continuation and development of the study of resin formation in benzoles, which has now been occupying the attention of the committee and its research chemists for some years. The first section of the report deals with large scale tests, which were arranged so as to confirm or refute the conclusions tentatively drawn from laboratory tests on the practicability of stabilising a comparatively crude benzole by the addition of a small quantity of some inhibiting substance which would prevent resinification on storage, or any after-effects when the stored benzole came to be used in an engine. For this purpose, benzoles containing unsaturated substances were specially prepared from both gas-works' and coke-oven "once run" benzoles. These benzoles, with and without the addition of cresol as an inhibitor, were tested before and after storage for four months. Laboratory tests indicated that the inhibition

had been effective, resin formation occurring only to the slightest extent on storage when the inhibitor had been used. In order to confirm this result, road tests were organised, from which it appears that the distillates stabilised by the inhibitor were little, if at all, inferior to acid refined benzole in their freedom from gumming in engines. The sub-committee, however, suggest more prolonged tests, such as would justify final conclusions and a report thereon.

The second section of the report on resin formation in benzoles is a continuation of laboratory investigations on the tendency of unrefined benzoles to produce resins on storage. Perhaps its most important part is the one dealing further with the "oxidation" test, which has been previously described, and the object of which is to test benzoles in the laboratory for their liability to resinification. The experiments have confirmed the deduction previously made that stability to the oxidation test corresponds with stability on storage. In view of the sensitive character of the resinification process, doubt is expressed as to the practicability of devising a test more reliable for the purpose of forecasting the behaviour of benzole on storage.

The influence of the various impurities in benzoles in accelerating or retarding resinification has also been studied, and it has been shown that the tendency to resinification of an unstabilised benzole is more reduced by dilution with petrol than would be the case if resinification was directly proportional to the concentration of the unsaturated constituents, an important conclusion, since most benzole in this country is used in admixture with petrol. It may be recalled that the 1928 report described work on the volatilities and absorptive capacities of various wash oils for the purpose of benzole recovery. This work has now been extended to the examination of suitable fractions of low temperature and Bergius tars. These did not show much difference from corresponding distillates from high temperature tars, as regards absorptive capacity, but they seemed to be distinctly inferior in stability.

Tests have also been made on the variation of absorptive capacities of two typical wash oils, creosote and gas oil, with temperature, and a nomogram has been constructed which enables the absorptive capacity at any temperature within the usual range of practice to be read off when the absorptive capacity at one temperature within the range has been experimentally determined.

The Committee felt that, although it was desirable to know the rate of deterioration undergone by different wash oils in use, such observations could only be of service if made in large scale working, and through the courtesy of Mr. G. A. Hebden, and The South Yorkshire Chemical Works, Ltd., observations and periodic tests are now being made on wash oil in use at the Parkgate

coke oven plant. Further studies have been made and reports prepared upon refining processes, other than the form of acid refining in common use. These include the Ufer (a modified form of acid refining) and the Instill processes.

Representations had been made to the Committee that value would attach for commercial and technical purposes to correction tables, prepared under the direction of the Committee, which could be applied to hydrometer readings and volumes, so as to give the correct value at the standard temperature of 60° F. For this purpose, the densities of mixtures of average samples of benzole and petrol have been determined. The results are submitted in a special section of the report, and nomograms facilitating their use have been prepared and supplied to members of the Association.

Tung Oil Research

THE Research Association of British Paint, Colour and Varnish Manufacturers may be congratulated on the quality of the research work they have instituted into the cultivation of tung oil within the Empire, and a tribute is due to their director of research, Dr. L. A. Jordan, for the exhaustive summary he has prepared of the possibilities of its production and his scholarly bibliography of the literature relating to the subject. The original paper was prepared in 1927, and distributed in various parts of the Empire as a private effort of the Association. A revised edition has now been prepared by Dr. Jordan, in which the subject is dealt with in great detail, and which, we understand, is to appear in full in the May number of the *Journal of the Oil and Colour Chemists' Association*.

Tung oil is known as an essential raw material of present-day varnish manufacture, and an indispensable constituent for certain types of varnish. At present we are dependent on China for supplies, often of inferior quality. In view of its importance to the paint and varnish industry, many feel the need of freeing the industry from its present dependence on China. Plantations have already been started in the United States, and are reported to be developing rapidly. The purpose of Dr. Jordan's report is to summarise the information bearing upon the cultivation of the tung oil tree and the manufacture of the oil from its fruits, so that a good judgment may be formed as to the feasibility of supplying our own needs by the cultivation of the trees within the Empire. The work has been most admirably done.

Tung oil was first known outside China about 1760. It was introduced into the United States in 1896, into Germany in 1897, and soon afterwards into England. Characteristically, as Dr. Jordan remarks, there was less interest shown in the oil in England than elsewhere, and many manufacturers first "discovered" it during the war, when special water-resisting varnishes were badly needed for aeroplane work. Since 1927 a great deal of experimental work has been undertaken in various parts of the Empire, and the Council of the Association may claim to have given the problem an Imperial interest. The investigations and experiments will have to proceed much further before a final judgment can be formed, but already the conclusion has been reached that "there are undoubtedly parts of the Empire climatically suitable for the growth of tung oil

trees and where the value of the land and the cost of native labour will ensure a relatively greater margin of safety to this enterprise than even in America." The work calls for patience, enterprise and money, and the results already attained and the prospects opened up constitute a convincing claim for all the support that can be secured.

The Davy Centenary

THE eminence of Sir Humphry Davy, the centenary of whose death occurred on Wednesday (May 29), is shown by the fact that even at the time of a General Election some of the daily newspapers have found space to record his career. Into a life of fifty-one years Davy crowded a remarkable number of brilliant achievements. He prepared no less than ten elements for the first time—sodium, potassium, magnesium, calcium, strontium, barium, boron, aluminium, yttrium, silicon, and columbium; and the whole of this work was covered by the five-year period 1807-1812! The wide range of his abilities is shown by an achievement in a field very remote from the chemistry of the elements, namely, the discovery of the miner's safety lamp. It would be impossible in the small space here available to do justice to the immense volume of his researches; but at a time when chemistry is developing with such extraordinary rapidity it is fitting that we should pause to contemplate the work of one of the greatest of the pioneers.

The Calendar

June 3 & 4	Merchandise Marks Act; Glassware Inquiry. 11.30 a.m. and 1.30 a.m.	London.
6	Chemical Society. 8 p.m.	Burlington House, London.
6	Society of Chemical Industry (South Wales Section): Visit to works of Aberthaw and Bristol Channel Portland Cement Co., Ltd. 2.20 p.m.	Cardiff.
13	Optical Society. 7.30 p.m.	Imperial College of Science, London.
19	Society of Glass Technology. 2.30 p.m.	Sheffield.
20	Chemical Society. 8 p.m.	Burlington House, London.
June 26	British Chemical and Dyestuffs Trader's Association: Annual General Meeting. 2.30 p.m.	London.
July 8-13	Society of Chemical Industry: Annual Meeting.	Manchester.
8	Reception at Municipal College of Technology. 7.30 p.m.	
9	Meeting of Council. 9.45 a.m. Annual General Meeting. "Science and Labour." Dr. A. D. Little. 10.15 a.m.	
	Luncheon at Midland Hotel. 12.45 p.m. Visits to Works and Laboratories. 2.30 p.m. Civic Reception by Lord Mayor and Lady Mayoress. 7.45 p.m.	
10	Annual Meeting: "The Human Factor in Industry." Professor T. H. Pear. "Process Development." Dr. Arthur D. Little. 10 a.m.	
	Luncheon by Clayton Aniline Co. at Midland Hotel. 12.45 p.m.	
	Garden Party by invitation of Dr. and Mrs. Levinstein, at Ford Bank, Didsbury. 3-6 p.m.	
	Annual Dinner, at Midland Hotel. 7.45 p.m.	

Chemical Warfare and Defence Against It A German View

The account published below is translated from an article by Dr. Hausen in "The Frankfurter Zeitung." It is interesting as showing the German attitude towards chemical warfare.

THE discussions over gas warfare, which are proceeding in all circles to-day, generally show us that ideas with regard to the type and significance of the chemicals used, and the possibility of defence, are as confused as can be, owing to the lack of technical knowledge. Reports from abroad of new gases of unheard-of activity are generally accepted in good faith; defence is often considered quite impossible; and it is recommended that everything should be left to international combinations.

Until all nations combine to renounce the use of chemical weapons, we shall always be in the same situation as on those other occasions in history when a new weapon has appeared: we must judge the value of the new weapon, and search for an effective defence.

Materials of Chemical Warfare

The materials of chemical warfare are mostly complex compounds of carbon. Physiologically, they may be divided into the following groups: Lachrymatory substances (chiefly halogen compounds); sternutatory substances (chiefly arsenic compounds); respiratory poisons (chlorine, phosgene, etc.); blistering substances (mustard gas, etc.); nerve poisons (hydrocyanic acid); and blood poisons (carbon monoxide).

Generally, we can divide these into irritants and poisons, while some substances combine both effects. The latter compel the enemy to make a quick retreat, or to take immediate counter-measures (gas-masks), and only when this is impossible does their poisonous action become effective. For this reason, many very poisonous gases are no more effective than harmless irritants. The most dangerous gases are those which do not betray their presence by irritation, but only produce their characteristic action after several hours.

Factors in Gas Warfare

The importance of a gas depends not only on its physiological action, but also on its suitability for gassing, *i.e.*, for forming a cloud of gas, and this depends on the state of aggregation of the substance, the density, the ease of forming gas or dust, etc. Many requirements are in opposition to one another, *e.g.*, easy volatility, which produces a quick action on the enemy, leads to a rapid disappearance of the gas, owing to dilution by the air. Again, a strong physiological activity is attained by the presence of very reactive chemical groups, the presence of which tends to make the compound easily decomposed by the moisture of the air.

Thus the military classification is based on the time factor, and starts with the quickly-acting but rapidly-disappearing gases for attack (phosgene, etc.), followed by the slow-acting gases which are used for defence (mustard gas, etc.), and finally the gases which only put the enemy out of action for a short time, but which penetrate the gas-masks (arsenic compounds).

The manifold demands which military technique makes with regard to a gas show why it is that of the more than one hundred apparently possible compounds, only a few can be considered practically, while often the most powerful poisons are of no practical use. Hydrocyanic acid, one of our strongest poisons, is practically unusable on account of its volatility. Those that can be used have been investigated so exhaustively that a sufficient defence may be built on this knowledge, and, in spite of alarming reports, the possibility of new gases is very small.

Dr. Pschorr, one of our [*i.e.*, Germany's] greatest organic chemists, has stated that it is not very probable that new types of gases with previously unknown reactive groups will be developed. He shares the view of many other chemists that the development of essentially new gases is improbable.

Protection Against Gases

Gas protection has to-day attained considerable importance in the industrial world. The first and chief protective device is the gas-mask, either in the form of the filter gas-mask, which removes the harmful constituents from the air either by physical or chemical means, or in the form of the oxygen mask, which itself supplies the oxygen necessary for breathing. The filter mask contains an absorbing layer (active charcoal)

and a chemically reactive layer suited to the nature of the poison gas.

The same mask is not applicable for all gases, but by combinations of a number of layers it is possible to obtain filter masks which will hold back a great number of different gases. In this case, the canisters become too heavy to be supported by the mask, and must be carried on the body, and connected to the mask by a non-kink tube. A special rubber valve prevents the return of the expired air to the canister. The filter boxes contain generally an active catalyst in order to oxidise any carbon monoxide to carbon dioxide. They may be employed against coal gas, producer gas, water gas, fire damp, etc., as also against hydrocyanic acid, ammonia, chlorine, sulphur dioxide, carbon monoxide, etc. Finely-divided solid matter, which forms with the air a colloidal system with special properties (aerosols), is more difficult to deal with, but by enlarging the filter and making it denser, the difficulties may be overcome.

The oxygen mask is quite independent of air supply from outside, as the wearer obtains oxygen either from cylinders, or, more recently, from compressed tablets of suitable material. The superiority of the oxygen mask over the filter mask, in that it is equally effective against all gases, is limited by the fact that the oxygen supply can only last for a limited time. There is a danger of using up the oxygen by putting on the mask before it is necessary. The filter mask also becomes exhausted in time, but this exhaustion is proportional to the amount of poison gas which has passed through it.

Protection Other than Masks

It is, however, clear that the complete solution of the problem of gas protection does not depend merely on the further development of gas masks. It is, rather, necessary to find means of chemically decomposing the gases. That this is possible and practicable is shown by the example of phosgene, an extremely poisonous gas, which is quickly destroyed by the action of water. Even mustard gas can be rapidly and effectively decomposed with the aid of chloride of lime. It will, however, be necessary to find out more about the decomposition of the gases used in chemical warfare. Professor Pschorr recommends the formation of research stations for the purpose. The significance of successful work in this direction, which would also be of use for industrial purposes, should be fully realised.

Gas masks and chemical destruction of gases are only part of the question. It would be necessary to have also an organisation for the technical enlightenment of the populace, instructions for their behaviour in gas attacks, a warning service, the formation of a medical corps, special police, etc. The safety measures which are laid down in industry must be extended to the whole people.

Marking of Imported Bottles and Containers

THE inquiry into the application of English glass manufacturers for an order that all imported glass bottles and containers should bear an indication of the country of origin came to a conclusion on Wednesday. In the course of his closing speech for the opponents, Mr. N. L. Macaskie argued that no case had been made out for the marking of imported bottles and containers, and asked the committee to hesitate very seriously before recommending an order in respect of them. Should, however, the committee decide to recommend an order, he expressed the hope that it would be a sales order, and that it should consist of labels stuck on to the goods, this being the most convenient method, although involving some expense. Further, he asked, in that event, that a period of time, say, six or nine months, should be allowed to elapse before any such order came into force. Mr. Wethered, replying for the applicants, said that the bottle trade in this country to-day was a very substantial one, the industry employing some 17,500 workpeople and having an output of some 1,000 million bottles per annum. The inquiry was concluded, and the committee will report to the Board of Trade in due course.

Science and the Election

By W. P. Dreaper, O.B.E., F.I.C.

THE number of those who have a scientific training or are interested in science in its many aspects is increasing yearly, and their combined influence would have a great effect on the fortunes of any party seeking office. Science is literally showering benefits upon mankind and putting in the hands of politicians new weapons in the way of improved methods of conducting both peace and war. The general views on life and the universe are rapidly changing owing to the discoveries of science. It is obvious that those accountable for such changes should do all they can to influence the voter by personal intervention and example.

A Lead by Scientific Workers

The early days of science saw inventions like the steam engine making modern industrial conditions possible. For the first time continuous operations were possible, and crude human effort was replaced by steam at a fraction of the cost of labour. To-day science enters into almost all our activities, and moulds thought into new channels. Its urge is universal. Its call for efficiency cannot be disregarded. Progress and happiness depend upon the way this is fully realised by the man in the street; and the only way this can be realised is by scientific workers taking a lead in this educational process.

I have previously suggested that a scientific committee in the House of Commons is an essential part of such a development. It is equally important that the ordinary voter should know exactly what science regards as important and what it still recommends. It must speak first hand. It must carry out its own propaganda work.

It has a "good house," for multitudes have had their interest in life doubled by science. The cinema and sound pictures have caught the imagination of the ordinary person. So has wireless. So have the gramophone, electric light, the motor car, artificial silk, radium, ultra-violet rays, and so on.

The public are constantly looking for fresh wonders and always look in the same direction for them. They already realise that science is a fairly godmother. Down at the root of civilisation science is revolutionising almost everything, even influencing literature and art.

The Common Good

Science has suggested a new idea of service, for it primarily always works for the common good. It is non-commercial until the time comes when its labours are translated into industrial advantage; and only then does it lead to the accumulation of wealth by creating capital values. Its influence is world-wide. Has not a living Englishman saved millions of lives in the tropics through his researches, and is he not still poor? Again, the inventor of the moving pictures was some years ago keeping a small photographer's shop on the south coast, and only received real recognition at the time of his death.

Many of our most urgent problems fall automatically into to-day's political programme, and a direct lead is required of scientific men, in order that the ordinary voter shall visualise the opinions of those who have devoted their work to the extension of the scientific spirit in our daily lives; and in this direction scientific workers must be ready to spread the knowledge as efficiently as they engage in research. This is a duty of first importance.

Science has, for instance, only one opinion of our slum areas, where death, disease and physical and mental inefficiency find their birthplace. These plague spots react upon the whole community. Unemployment is another sign of inefficiency in one or many directions. Every day lost by science in pointing out the real causes of these defects in our national life is a reflection on the efficiency of science. It must be dynamic and work right through the social fabric and not confine its interest to research, which, after all, is not the most difficult part of progress in many cases. The great influence of science in the past has come from men like Pasteur, who were able to carry their labours right through all stages of development and use, and who were not obliged to wait until others came along and carried out the second stage of discovery for them.

Our leading government departments are now well equipped with scientific workers, but their activities depend mainly

upon political action and assent. The main support must come from the body of scientific workers spread through the country. Education must always be a main plank on a science programme, and the work originally carried on by Haldane and others, continued and amplified. National efficiency demands that every boy and girl shall know that they have a reasonable chance of establishing a position where they may leave behind them some record of personal achievement. Also that education in its widest sense shall be still available, while life and mental activity continue.

Science must specially look after the development of those industries which owe their being to research and research only, and see that their development is in the right hands. Also that in the early days of development the State must in some way or other help if private enterprise lags behind. To what extent the new scientific industries may solve the problem of unemployment cannot be settled without trial, but beyond doubt they can do a great deal. Artificial silk to-day gives employment, direct and indirect, to no fewer than 350,000 hands. One works in this country making synthetic ammonia compounds from the air has cost no less than £25,000,000, and is still being extended. And there are still other worlds to conquer.

Development of New Industries

In time, no doubt, industry itself through its trade associations will organise a "first aid" scheme for the rapid development of new scientific industries. Every company making profits might well subscribe to such a scheme. The "balancing" of industry in certain districts like those of the mining ones, by the setting up wherever possible of a second industry, preferably a new scientific one which requires both male and female labour, would also be seriously considered as an alternative to moving the men.

But, until industry as a whole tackles this important problem of development of new industries, the State must consider how far it must intervene and financially help by way of guarantee of interest. By keeping in advance in these industries there is an additional chance of exporting the products so made to other countries not yet fully equipped.

Such help would be divided into two categories. The first would deal with the development of laboratory work to the stage of small but full-scale plant, and the second with the supply of capital for further development to large-scale production.

A point demanding attention is that scientific men in all quarters of the globe have a common bond of interest, which is not excelled or equalled in any other direction. This influence, as time goes on, will have far-reaching effects, especially if other countries follow the lead we may give them.

Science and the Empire

The development of our Empire must also be largely influenced by research, and undoubtedly the scientific worker will do much to consolidate it and develop it scientifically in the best interests of all.

In religion, science observes a gradual opening out of knowledge of a Power behind the Universe. It also realises that physical research is not the instrument which discloses *Why things Happen*, but only *How things Happen*.

This short statement of things on which the scientific man is qualified to express opinions (founded upon his own knowledge and experience) indicates that he should take a real and active part in politics, and prepare for the time when science will be a far more potent factor than it is to-day.

Every scientific worker must share his views and beliefs with the political party he works with, and thus leaven the whole sphere of political life with the scientific spirit. This would lead to security, and help on the evolution of civilisation and control its path. In time the true democracy will be born out of science. This would set a seal on the worth of science and record its real success in the interests of humanity.

At the early stage of development of what may ultimately be a Science Party, one can only express personal views. For what they are worth, they are put forward in this article in condensed form.

Report of the I.G.

Account of Past Year's Working

THE report of the board of the I.G. Farbenindustrie A.-G. for 1928, just issued, states that the profits have increased, but the increase, in view of the present economic and political position, has been used for writing-off purposes, and for strengthening the reserves. A dividend of 12 per cent., the same as last year, is proposed. After writing off 71,778,528 marks for depreciation, compared with 74,741,809 marks the previous year, there remained a net profit of 118,458,169 marks, compared with 100,812,133 marks in 1927. It is proposed to place 11,708,644 marks to the reserves, which will then amount to 200,000,000 marks, and 6,600,000 marks to a special fund for the relief of pensioned employees. Including the balance of 4,426,777 marks from the previous year, 5,463,375 marks is carried forward. The number of workers employed rose to 154,596.

Dyestuffs

With regard to the dyestuffs section of the I.G., reference is made to the understandings arrived at with the French and Swiss manufacturers, which have already been mentioned in these columns. The sales of dyestuffs were greater in 1928 than in 1927, largely because of a demand for better dyes. Among new dyestuffs developed were blue and violet derivatives of the Naphthol AS series, long demanded by the cotton industry; the Indigosol type were further developed by the closely allied firm of Durand and Huguenin, of Basle. There was an increase in the sale of wetting agents.

Especially favourable was the trade in acids and their by-products, compressed gases, pigments, lithopone, vulcanisation accelerators and organic intermediates. In association with an American company, the manufacture of titanium white has been taken up. Various understandings with foreign groups in regard to other products were also arrived at. There was a growing demand for light metals, especially Elektron alloy. With regard to therapeutic products, Plasmochin is especially mentioned as having been favourably received. "Vigantol" (a vitamin D product) is being marketed in conjunction with the firm of E. Merck, of Darmstadt.

Artificial Silk and Fertilisers

The tone of the report on the artificial silk activities of the I.G. is distinctly lacking in optimism. Domestic competition in Germany itself, as well as foreign competition, made it necessary for the German Viscose Convention to take retaliatory measures, and finally, at the end of the year, to abrogate the price agreement. There was an increase in exports. The I.G., together with the Dutch firm of Kunstzijde Industrie-Breda, has an interest in British Breda.

There was an increased production of synthetic nitrogenous fertilisers, especially of Leunasalpeter, calcium nitrate, and various types of Nitrophoska. The production of Leunaphos and calcium-ammonium nitrate was commenced. The home and foreign demand for urea could not be satisfied, and an enlargement of the plant for its production is taking place.

Coal Liquefaction

The coal liquefaction processes have continued and been further developed. The production of synthetic petrol was increased. As raw materials, lignite, lignite tar, and producer tar are used. Further work was done on the liquefaction of bituminous coal. The Standard Oil Co., of New Jersey, has erected a plant for the treatment of cracking residues and heavy oils by the I.G. methods (presumably hydrogenation), and the plant is said to have fulfilled all expectations. It is hoped that these methods will replace or supplement the cracking process hitherto used.

Finally, reference is made to the formation of the Internationale Gesellschaft für Chemische Untermehmungen A.G. in Switzerland (the I.G. Chemie of Basle) and the American I.G. Chemical Corporation.

I.G. and Ford Motor Company

THE I.G. Farbenindustrie A.-G. has taken over 40 per cent. of the capital of the German Ford motor company. In this connection it may be observed that Dr. Bosch, of the I.G., is already a director of the German Ford company, while Mr. Edsel Ford, son of Mr. Henry Ford, is a director of the new company formed recently in the United States as an offshoot of the I.G. (the American I.G. Corporation).

The Chemical Future of Widnes

Statements by Sir Max Muspratt and Dr. Clayton

IN the course of the parliamentary contest at Widnes, where Dr. G. C. Clayton, the ex-member, was again the Conservative candidate, statements concerning the future of Widnes as a chemical centre were made by himself and Sir Max Muspratt, both directors of Imperial Chemical Industries, Ltd.

Sir Max Muspratt's Views

"There was a time," Sir Max said, "when I was made chairman of the United Alkali Co., when everyone told me I was a fool to take on the job because only disaster and trouble was before me. I was not deterred, and neither was Dr. Clayton. With a deep-rooted love of Widnes he and I set ourselves to work to reform and readjust the U.A. Co. so that progress and prosperity could continue in Widnes. During those critical years of the war we achieved great results, and if there had been peace in industry after the war we probably would have continued to achieve good results. But the chemical industry requires certain elementary raw materials, and the time came when, rightly or wrongly, there was trouble in the coal industry. It became known not only to our competitors at home, but to our competitors abroad, and they thought that the great chemical export industry of this country was falling into their hands. I need not mention who those countries were. As a result the chemical manufacturers of this country were brought face to face with the fact that a huge country across the Atlantic with a vast capital, a great deal of which was obtained by profits from the war, for which we fought, was going to attack us in every part of the world, and it became essential that we should come together. If, as a result of losses resultant upon the coal stoppage, the United Alkali Co. had gone on without joining Imperial Chemical Industries much worse things would have happened for Widnes than have happened in practice. It meant a lot of give and take. It meant that a lot of things which the United Alkali Co. had kept up, as what I may call "bluff," against our home competitors, had to go, and I frankly admit that the immediate result in Widnes on the formation of the I.C.I. has not, at first sight, been a satisfactory one. But I do ask you to believe Dr. Clayton and myself when we say that had the great merger not been formed it would have been infinitely worse for Widnes. It does not mean that Widnes is going to be wiped out, but what we want is to find new developments and new industries in Widnes. A great undertaking like the I.C.I. is infinitely more capable of doing what the United Alkali Co. was capable of carrying out."

Dr. Clayton's Assurance

Dr. Clayton, in the course of a letter, wrote:—"It is true that the alterations in processes, forced on us by world competition, have caused the closing of the Muspratt works. You can be certain that Sir Max Muspratt and I were very difficult to persuade to agree, but we had to allow that, even if it had been a subject for the United Alkali Co. to decide upon, we should have been forced to transfer the manufacture to Fleetwood. The formation of Imperial Chemical Industries has enabled us to deal more generously with the men displaced, and also in many cases to transfer them elsewhere, than we could have possibly done under the U.A. This is no time to make promises, but there are several projects under discussion which are hopeful, but any premature disclosure might prejudice the negotiations, so all I can say to-night is that we should keep our tails up, and if we pull together I can see no reason why we should not have our fair share of the prosperity of Imperial Chemical Industries."

Marriage of Mr. Emile Mond's Daughter

MR. EMILE S. MOND gave away his only daughter, Miss May Mond, at her marriage on Tuesday afternoon at Westminster Cathedral to Lieutenant Cippico, of the Royal Italian Navy. After the ceremony, the guests, among whom were many members of the Diplomatic Corps, were received by Mrs. Emile Mond at her residence, 22, Hyde Park Square.

Low Temperature Tar Chemical and Commercial Aspects

A LECTURE on "Low Temperature Tar" was delivered by Dr. M. A. Matthews, on Monday, May 27, at the Sir John Cass Technical Institute, London, Professor G. T. Morgan in the chair.

The fact, Dr. Matthews said, that there were at present in Great Britain 43 companies, representing a capital of eight million pounds sterling, directly interested in the low temperature carbonisation of coal showed how commercially important the process had become. The products of low temperature carbonisation were (i) a semi-coke, i.e., a smokeless fuel the use of which was expected to solve the smoke nuisance; (ii) a rich gas of very great heating power, and (iii) tar. It was only with the last of these that the lecture was concerned.

Low temperature tar differed considerably from the high temperature tar produced by gasworks and coke ovens, and contained a far higher percentage of "tar acids" and non-aromatic products. Some workers had stated that low temperature tar resembled crude petroleum, but this was hardly justified and it would be more correct to say that low temperature tar occupied, roughly speaking, a position between high temperature tar and crude petroleum. Low temperature tar was somewhat variable in nature, as its composition depended upon the type of coal carbonised, upon the temperature of carbonisation and upon the construction of the retort used, i.e., upon the time during which the tar vapours remained in contact with the heated charge. Since low temperature tar was readily decomposed by heat, the last two of the above factors were of great importance, the thermal decomposition of the tar resulting in an increase in "aromatics" at the expense of the paraffins. This facile decomposition of low temperature tar on heating rendered its chemical analysis a matter of extreme difficulty, but the presence of several interesting chemical substances had been demonstrated by the Chemical Research Laboratory, where a method of examination by the use of solvents had been worked out, the tar never being heated above 120° C.

From the commercial point of view, the low temperature carbonisation of one ton of bituminous coal produced directly about 4 gallons of excellent motor spirit, but this amount could be greatly increased by suitable treatment of the higher boiling fractions of the tar. Such treatment might consist of a "cracking" process by simple distillation under pressure, as long practised in the petroleum industry, but experiments indicated that much more satisfactory results would be obtained by a combined cracking and hydrogenating process of a similar nature to that used in Germany for the production of motor spirit from brown coal or lignite tar.

Among other products that could also be obtained from low temperature tar might be mentioned lubricating oils, fuel and Diesel oils, powerful disinfectants (from the tar acids) and resins suitable for use as paints, varnishes, insulating material, etc. The pitch left on distilling low temperature tar was more brittle than that from high temperature tar. It contained less free carbon, but had been found useful in the manufacture of roofing materials and as a binding agent for briquettes and other types of "patent" fuel. When the chemical nature of low temperature tar was more fully understood, there could be no doubt but that many other uses would be found for it, and indeed the systematic study of low temperature carbonisation processes promised to be of material assistance in restoring the prosperity of the coalfields.

New Professorship at Oxford

AN offer of a new professorship to be known as the "George Eastman Visiting Professorship," has been made to Oxford through the Association of American Rhodes Scholars by Mr. George Eastman, the head of the Kodak firm. The scholarship is offered on condition that it shall be held by "a citizen of the United States, eminent in teaching or research in any branch of university study; and he shall lecture and give instruction in such subject." He is to be selected by a board representing Oxford University and the Association of American Rhodes Scholars. The professor will be appointed for a period of from one to five years, and successive appointees shall, if possible, represent different subjects of study. The offer will be considered in Convocation on June 4. It is understood that the amount involved will be £40,000.

The Work of Patent Agents Annual Meeting of Chartered Institute

AT the annual general meeting of the Chartered Institute of Patent Agents, held in London on Tuesday, Mr. R. W. James, the retiring president, referred to the importance of the council's activities as guardians of the public interests. The expiring year's record exemplified the twofold aspect of these activities—namely, the protection of the public from the unqualified practitioner and the formulation of definite standards for the guidance of their members in the practice of their profession. The council had as usual conducted the intermediate and final qualifying examinations which it was now necessary for any person to pass before he could practise as a patent agent, and in addition it had successfully instituted proceedings—the first under the Act of 1919—against an unqualified practitioner who was acting as a patent agent.

The large amount of capital available for successful inventions made it very desirable that the council should take up a definite line for the guidance of the Fellows of the Institute when framing reports on patents covering such inventions for inclusion in company prospectuses, and the recommendations recently issued by the council in this regard might, he thought, be studied with advantage by all those outside the profession whose duty it was to guide the placing of investments. With every succeeding year, the lay public, including merchants and manufacturers, became more and more dependent on the guidance of its professional advisers, and it was very gratifying to note that, so far as chartered patent agents were concerned, the council was doing its share in the work of ensuring that such guidance was wisely and fairly exercised. Mr. Arthur Woosnam was elected president for the ensuing year.

A British Colour Council

FOR some time past dissatisfaction has been expressed concerning colour and fashion predictions in England. A committee convened by representatives of manufacturers, dyers and distributors, to explore the possibilities of co-ordinating colour prediction for the British fashion trades, has now formulated its proposals, which are as follows:—

1. That an organisation be formed, the title of which should be the British Colour Council.
2. That the Council should be composed of individuals, firms and trade organisations interested in fashion colours.
3. That the object of the organisation should be the determination, co-ordination and propagation of colour tendencies for the fashion and allied trades.

It is proposed to call, in the early autumn, a meeting of representatives of all the interests concerned, with the object of bringing the British Colour Council into existence. The committee which will call this meeting is unanimous in its opinion that such a council is essential to the welfare of the British fashion trades, and that the moment is now ripe to take definite action.

Effect of Temperature on Cements

THERE is a very extensive literature on the subject of the effects of temperature on the setting times and strengths of cements and concretes, but the mass of data available is confused and uncoordinated. The Building Research Station of the Department of Scientific and Industrial Research accordingly experienced difficulty in dealing with numerous enquiries received for information on these matters; also it was found necessary to attempt some condensation before the data could be of service in connection with the research work in progress. Dr. W. N. Thomas undertook the laborious task of summarising the literature, and Mr. Davey has carried out some experimental work in an attempt to clear up a number of disputed points. It is thought that Dr. Thomas's critical survey (*Effect of Temperature on the Setting Times of Cements and on the Strength of Cements, Mortars and Concretes*, Building Research Special Report No. 13, published for the Department of Scientific and Industrial Research by H.M. Stationery Office, pp. 38, 1s.) will prove of value to all users of cements and concretes.

Appointments Vacant

LECTURER IN METALLURGY AND ASSAYING in the Manchester Municipal College of Technology. For details see p. xxii.

From Week to Week

THE D.C.L. DEGREE of the University of Durham is to be conferred upon Lord Melchett on Wednesday, June 5.

THE WORLD PRODUCTION of superphosphate in 1928 amounted to about 14.25 million tons, as compared with 11.3 million tons in 1913.

LAWES' CHEMICAL MANURE CO., LTD., announce that since May 30 the registered office of the company has been removed to the works at Creeksmouth, Barking, Essex.

DR. L. V. REDMAN, who delivered the address of welcome to the British chemical party in New York last September, has been elected president of the Chemists Club, New York, in succession to Dr. T. B. Wagner.

A SLIGHT OUTBREAK of fire at the Cleveland Salt Works, Middlesbrough, caused damage to the roof of one of the salt pans, and a considerable quantity of salt, which was almost ready for preparing, was lost.

AT A MEETING of the Birmingham Metallurgical Society, on Tuesday, Mr. W. C. Gray was elected president, and Mr. A. C. Craig was re-elected honorary treasurer. Mr. F. G. Tustin will continue as secretary.

MR. K. L. GOODALL, B.Sc., of Hereford, has left the research staff at Woolwich Arsenal, to take up a position with Synthetic Ammonia and Nitrates, Ltd., at Billingham-on-Tees, where he has been appointed an assistant instruments manager in the process gas instruments section.

THE STANDING COMMITTEE (General Merchandise) appointed by the Board of Trade under the Merchandise Marks Act, 1926, will hold its inquiry into Lamphown Ware and Scientific Glassware of all descriptions, including Tubing and Rod, on Monday and Tuesday next, June 3 and 4, at 11.30 a.m. and 10.30 a.m. respectively.

THE PRODUCTION OF ALUMINIUM SALTS in the United States in 1928 was 386,905 short tons, valued at \$13,990,264, an increase of 8,135 tons, or 2 per cent. in quantity, but a decrease of \$298,166, or 2 per cent. in total value, as compared with 1927. Exports of aluminum sulphate from the United States in 1928 were 22,713 short tons, valued at \$552,342.

PRODUCTION OF ARTIFICIAL SILK at the Alliance Artificial Silk Co.'s Lowestoft works, from the first complete spinning unit, will commence on June 17 next. The board has arranged for a regular supply of cellulose acetate to the works. The nucleus of a trained staff has been secured, and technical collaboration arranged for dealing with the various dyeing problems.

SOUTH WALES patent fuel manufacturers (writes our South Wales correspondent) are in negotiation for fixing a staple selling price. An agreement covering a definite minimum price is already in operation, but if the negotiations now proceeding materialise into a definite scheme it is probable that sales of all Welsh patent fuel will be controlled from one office at Cardiff.

DOCTOR LILIENFELD, of Vienna, has recently patented a new mercerising treatment by which it is claimed that cotton cloths are much improved in appearance. The capital for the practical application of these inventions is being provided by British Cyanides, Ltd., who are forming a subsidiary company for the purpose, and are erecting a plant at their Oldbury works.

AT AN "AT HOME" given at the Tregenna Castle Hotel, St. Ives, on May 25, by Dr. W. Cullen, president of the Institute of Mining and Metallurgy, and Mrs. Cullen to the Cornish members of the Institute, opportunity was taken to present Dr. Cullen with a beautifully carved serpentine vase, bearing the inscription "Presented to Dr. Cullen by a number of Cornish friends, May 15, 1929" (that being the date on which he assumed the office of president).

THE SOUTH WALES SECTION of the Society of Chemical Industry has arranged a visit to the works of the Aberthaw and Bristol Channel Portland Cement Co., Ltd., Aberthaw, Glamorgan, for Thursday afternoon, June 6. The party will travel by train leaving Cardiff at 2.20 p.m. Members of the society who intend to go are asked to send a postcard to the Assistant Hon. Secretary, Mr. Ernest A. Rudge, Technical College, Cardiff, not later than June 4.

THE LIVERPOOL NITRATE Co. has offered to purchase the share capital of the Salar del Carman company for £220,000, on the basis of exchanging four £1 Liverpool Nitrate shares for five Salar del Carman shares. The Salar del Carman company, should the offer be accepted, will go into liquidation, the whole of its liabilities will be taken over, and the expenses of liquidation paid by the buyers. It may be recalled that a provisional agreement has been made by the Santiago Nitrate Co. for the sale of its oficina, nitrate grounds and stock to the Liverpool Nitrate Co.

A SPELTER WORKS and a superphosphate works are advertised for sale on p. xxii.

LIEUT.-COMMANDER COLIN BUIST has been elected to the board of Low Temperature Carbonisation, Ltd.

LORD MELCHETT, at a meeting in Acton on Tuesday, said that the works of the Mond Nickel Co. in North Acton, were to be greatly extended.

THE DUTCH ENKA FIRM and the German firm of Glanzstoff, both manufacturers of artificial silk, are negotiating with a view to a fusion of interests.

DR. R. H. PICKARD, F.R.S., director of the British Cotton Industry Research Association, has been elected by Convocation a member of the Senate of the University of London.

THE PRODUCTION OF MERCURY in Italy in 1928 amounted to 1,800 tons in 1928, compared with 1,996 tons in 1927. About one quarter of the amount produced goes to Germany.

NEGOTIATIONS for the merging of certain of the newer British artificial silk producing companies are said to have reached an advanced stage. No names or details have so far transpired.

A MEETING of the Congress of Pure and Applied Chemistry began at Florence on Monday. Delegates to the number of 400 were present, representing France, Switzerland, Great Britain, Rumania, Russia and the United States.

THE ANNUAL GENERAL MEETING of the British Chemical and Dyestuff Traders' Association will be held in London on Wednesday, June 26, at 2.30 p.m. It is proposed to organise a trade luncheon to precede the meeting.

AN OIL-CRACKING PLANT is to be set up by Petroleum Refineries, Ltd., alongside the Admiralty oil depot at Killingholme, on the Humber, for the purpose of deriving motor spirit and bunker oils from the by-products of low temperature carbonisation.

THE DUTCH RAYON COMPANY "Nijma," in Nijmegen, which was formed by a group of textile manufacturers, is to begin production towards the end of September. The Dutch Enka company reports that the extensions to its works at Arnheim, Ede and Rotterdam are proceeding. Construction work on a new acetate factory will begin this year.

THE FOLLOWING APPOINTMENTS for chemical fellowships tenable by British graduates in American universities have been made by the committee of award for the Commonwealth Fund Fellowships: Dr. H. J. Emeleus (London) to Princeton; Dr. W. G. Humphreys (Oxford) to Harvard; Mr. A. J. Watters (St. Andrews) to Wisconsin; Mr. H. Barak (New Zealand and Oxford) to Princeton.

RECENT WILLS INCLUDE:—Dr. R. L. M. Mackenzie, chemical pathologist to St. Bartholomew's Hospital, and formerly lecturer on chemical physiology in the Cardiff Mental School (net personality £11,891), £14,133.—Mr. B. A. Firth, late chairman of Thomas Firth and Sons, Ltd., of Sheffield, and deputy-chairman of John Brown and Co., Ltd., of Sheffield and Clydebank (net personality £367,396), £476,992.

SHAREHOLDERS of the Rio Tinto Co., at an extraordinary general meeting on Monday, confirmed the resolutions passed recently altering the articles of association and providing for the creation of an additional 50,000 Ordinary shares of £5 each. Sir Auckland Geddes, the chairman, who presided, said that it was impossible at the moment to state the price at which the new shares would be issued, but notice would be given to the shareholders explaining how to apply for the additional shares to which they were entitled.

MR. ALEXANDER W. THOMSON, managing director of Alexander Cross and Sons (London), Ltd., is lying ill in a nursing home in London, suffering from pneumonia and pleurisy. During the Chilean nitrate crisis in 1920-22, Mr. Thomson was a member of the general committee, and was also a member of the executive committee which met daily to conduct the affairs of the Pool. Important negotiations are now proceeding between the Chilean Government and the Chilean Nitrate Committee in London for the new season beginning on July 1, and it is particularly unfortunate that Mr. Thomson is unable to attend to business at present.

A COMPANY known as the Australian National Power Alcohol Co. has been founded in Australia, with a capital of £250,000, of which half is in the hands of the Distillers Co. and the other half in the hands of Australian interests. A factory is being built at Mackay, North Queensland, and others will be built later at Townsville and Cairns. The alcohol will be produced from molasses and freed from water by a special process, in order that it may be readily mixed with petrol, forming a mixture of 15 per cent. of alcohol and 85 per cent. of petrol. This mixture will be put on the market as a motor fuel, under the name "Shellkol," the necessary petrol being supplied by the Shell Co., who will also take charge of the marketing arrangements.

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- Applications of ceric sulphate in volumetric analysis. VI.—Oxidation of hydrogen peroxide by ceric sulphate. Indirect determination of lead. N. H. Furman and J. H. Wallace, Jr. *J. Amer. Chem. Soc.*, May, pp. 1449-1453.
- COLLOID MILLS.**—Mechanical dispersion by means of the colloid mill. P. M. Travis. *Ind. Eng. Chem.*, May 1, pp. 421-425.
- GENERAL.**—Manufacture and properties of regenerated cellulose films. W. L. Hyden. *Ind. Eng. Chem.*, May 1, pp. 405-410.
- Present trends in dust recovery. E. P. Partridge. *Ind. Eng. Chem.*, May 1, pp. 446-451.
- Evaporation. P. DeWolf. *Ind. Eng. Chem.*, May 1, pp. 451-456.
- ORGANIC.**—The preparation and properties of the isomeric heptanes. I.—Preparation. G. Edgar, G. Calingaert and R. E. Marker. II.—Physical properties. G. Edgar and G. Calingaert. *J. Amer. Chem. Soc.*, May, pp. 1483-1491, 1540-1550. The nine isomeric heptanes have been obtained pure; various physical properties are determined.
- The action of sulphur on normal heptane and normal butane. R. B. Baker and E. E. Reid. *J. Amer. Chem. Soc.*, May, pp. 1566-1567. Heptane gives a substituted thiophen, and butane seems to give thiophen itself (small yields).
- PLANT.**—Stainless iron nitric acid equipment. W. M. Mitchell. *Ind. Eng. Chem.*, May 1, pp. 442-446.
- Mechanical handling of materials in and about the chemical plant. I.—A. K. Burditt and W. F. Schaphorst. *Ind. Eng. Chem.*, May 1, pp. 489-493.
- The progress of industrial heating by oil circulation. A. B. McKechnie. *Ind. Eng. Chem.*, May 1, pp. 496-498.
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German

- ANALYSIS.**—Iodoxydimeric determinations. A. Schwicker. *Zeitschrift analytische Chem.*, Vol. 77, Parts 5 and 6, pp. 161-169. Methods of analysis based on the direct reduction of iodic acid to hydriodic acid by sulphurous acid. Applications to the determination of sulphurous acid, hydrazine, ferrocyanide, hydrothiocyanic acid, arsenious acid, and antimony trioxide.
- The bromometric determination of phenol and the cresols. H. Ditz. *Zeitschrift analytische Chem.*, Vol. 77, Parts 5 and 6, pp. 186-202.
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- The detection of hygroscopic moisture in coal. H. Löffler. *Chemiker-Zeitung*, May 25, p. 411.
- The determination of purity of sodium and potassium ferrocyanides by titration with zinc sulphate solution. *Chemiker-Zeitung*, May 22, p. 399.
- APPARATUS.**—A new form of desiccator and a nest for insertion in it. H. Liesegang. *Chemische Fabrik*, May 23, pp. 256-257. Suggests the production of desiccators of square cross-section: also the production of nests (containing square apertures for the insertion of various

articles) which could be fitted into desiccators of any type.

- CELLULOSE.**—The constitution of cellulose xanthogenate. II.—T. Lieser. *Annalen*, Vol. 470, Parts 1 and 2, pp. 104-110.
- GENERAL.**—Faults in crystal structure and physico-chemical properties. A. Smekal. *Zeitschrift angewandte Chem.*, May 18, pp. 489-495.
- Advances in inorganic chemistry since 1925. W. Klemm. *Zeitschrift anorganische Chem.*, May 18, pp. 494-501.
- Advances in our knowledge of mineral oils: The technical development of the petroleum industry since the war. M. Naphtali. *Zeitschrift angewandte Chem.*, May 18, pp. 508-518. Origin of petroleum; the cracking process; refining and desulphurisation; production of lubricants; analysis of petroleum; paraffin; asphalt; by-products; research.
- A microanalytic method of vapour pressure determination. J. B. Niederl. *Zeitschrift analytische Chem.*, Vol. 77, Parts 5 and 6, pp. 169-174.
- ORGANIC.**—Contribution to the knowledge of thionaphthene. K. Fries and E. Hemmecke. *Annalen*, Vol. 470, Parts 1 and 2, pp. 1-19.
- The synthesis of isomeric ephedrine and their homologues. W. N. Nagai and S. Kanat. *Annalen*, Vol. 470, Parts 1 and 2, pp. 157-182.
- A new synthesis of ephedrine and related aminoalcohols. A. Skita with F. Keil. *Zeitschrift anorganische Chem.*, May 18, pp. 501-503.
- The thermal behaviour of phenols. II.—The thermodynamics and the mechanism of the thermal decomposition of phenol and its homologues. A. Hagemann. *Zeitschrift angewandte Chem.*, May 18, pp. 503-508.

Miscellaneous

- ANALYSIS.**—The determination of nitrogen by Kjeldahl's method, applied to the analysis of dyestuffs and intermediate products. P. Sisley and M. David. *Bulletin Soc. Chim. France*, March, pp. 312-324 (in French).
- The estimation of unsaturation with potassium bromate-bromide mixture. F. Cortese. *Recueil Travaux Chim. Pays-Bas*, May 15, pp. 564-567 (in English).
- GENERAL.**—The autocatalytic decomposition of thiosulphuric acid. II.—K. Jablczinski and S. Frenkenberg. *Bulletin Soc. Chim. France*, March, pp. 210-217 (in French).
- The decomposition of sodium sulphate. G. Marchal. *Bulletin Soc. Chim. France*, March, pp. 225-228 (in French). The action of heat (1,300° C.), silica (at 1,200° C. and 1,300° C.), and alumina (1,300° C.) on anhydrous sodium sulphate.
- The preparation of collodion membranes. J. Böeseken and O. Meyer. *Recueil Travaux Chim. Pays-Bas*, May 15, pp. 504-507 (in French).
- ORGANIC.**—A homologue of ephedrine. J. S. de B. Sanchez. *Bulletin Soc. Chim. France*, March, pp. 285-286 (in French).
- Mixed glycerides of salicylic acid. I and II.—V. Humnicki. *Bulletin Soc. Chim. France*, March, pp. 275-279, 279-283 (in French).
- Derivatives of 8-aminoquinoline. R. P. Dikshoorn. *Recueil Travaux Chim. Pays-Bas*, May 15, pp. 517-544 (in English). Describes a number of 8-quinolyl derivatives of urea. 5-Nitro-8-amino-quinoline is described for the first time. The diazonium hydroxides derived from 5-nitro-8-amino- and 5:7-dinitro-8-amino-quinoline have been isolated.
- Quinolyl-2:4-dinitronaphthylamines. R. P. Dikshoorn. *Recueil Travaux Chim. Pays-Bas*, May 15, pp. 548-549 (in English).
- Halogenodinitroquinolines. R. P. Dikshoorn. *Recueil Travaux Chim. Pays-Bas*, May 15, pp. 550-559 (in English).
- The hydrolysis of nitriles according to the phosphoric acid method. S. C. J. Olivier. *Recueil Travaux Chim. Pays-Bas*, May 15, pp. 568-570 (in French).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

310,353. CONDENSATION PRODUCTS OF THE ANTHRAQUINONE SERIES, MANUFACTURE OF. A. Carpmal, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, January 24, 1928.

1-hydroxyanthraquinone is treated with aluminium chloride in the presence of an organic tertiary base to obtain a condensation product. Two anthraquinone groups become linked together with the formation of 1:1'-dihydroxy-2:2' dianthraquinonyl. An example is given in which pyridine is employed as the base, and the purification is described.

310,438. ORGANIC COMPOUNDS CONTAINING OXYGEN, PRODUCTION OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application dates, January 23 and August 24, 1928.

Oxygen compounds are obtained from aliphatic or hydroaromatic hydrocarbons or halogen substitution products, ethers, etc., by treating with carbon monoxide under pressure in the presence of anhydrous halides of aluminium or boron at a pressure of 80 to 150 atmospheres and temperature of 30° to 60° C. Boron halides require higher working temperatures. The process is suitable for treating individual hydrocarbons, and mixtures such as occur in various petroleum fractions and are practically free from aromatic hydrocarbons, such as petroleum ether, ligroin, lamp oil, and purified petroleum jelly, also brown coal tar oils, destructive hydrogenation products, and similar substances. Derivatives of these hydrocarbons give greater yields of carboxylic acids. Examples are given of the treatment of pentane, to obtain ethyl-isopropyl ketone and other products, cyclo-hexane to obtain an oil distilling between 100° to 150° C., N-butane to obtain ketones, and a number of similar examples.

310,562. CONDENSATION PRODUCTS FROM UNSATURATED HIGHER FATTY ACIDS OR THEIR GLYCERYL ESTERS, MANUFACTURE OF. A. Carpmal, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, January 28, 1928.

Condensation products are obtained from the unsaturated higher fatty acids or their glyceryl esters and phenols, by causing these compounds to react in the presence of a substantial proportion of a dilute mineral acid. The starting substances may be natural fatty oils such as linseed oil, olive oil, china-wood oil, etc. The acid employed may be sulphuric acid of specific gravity 1.3 to 1.4, and the process may be conducted at about 100° C. The condensation products are distinguished by solubility in alkalis, and by the smooth manner in which they can be sulphonated, and in the higher stages of condensation by insolubility in most solvents. Examples are given of the formation of condensation products from china-wood oil and linseed oil with phenol and resorcinol.

310,594. SALTS, PRODUCTION OF. A. E. Mitchell, Norton Hall, The Green, Norton-on-Tees, Durham, and Imperial Chemical Industries, Ltd., Imperial Chemical House, Millbank, London, S.W.1. Application date, February 16, 1928.

A mixture of salts is obtained by treating a base with an acid, or treating a base or an acid with a decomposable salt while flowing downwards together in a packed tower, and employing an excess of one of the reagents and then neutralising the solution with volatile acid or alkali. The volatile acid or alkali is supplied to the base of the reaction zone in counter-current, or the product may be treated in a separate vessel or tower with the volatile acid or alkali. The process may be applied to the treatment of nitric acid with chalk. The chalk is mixed with water or a solution of calcium and ammonium nitrate obtained in a previous operation, and fed to the top of a tower. Nitric acid is sprayed in at a lower level in excess of that required for neutralisation. Air or gas containing ammonia is introduced at the bottom in such quantity that an alkaline solution of calcium and ammonium nitrates is obtained. The concentrated solution may be sprayed into a current of air to obtain the mixed salts.

310,623. HIGHER ALCOHOLS, MANUFACTURE OF. W. G. Davis, Norton Hall, The Green, Norton-on-Tees, Durham, and Imperial Chemical Industries, Ltd., Imperial Chemical House, Millbank, London, S.W.1. Application date, March 21, 1928.

A mixture of carbon monoxide and hydrogen is passed under pressure over catalysts to obtain a product containing higher alcohols, methanol, and water, but the higher alcohols, mainly isobutanol, are difficult to separate. The crude product is distilled to remove the bulk of the methanol and isolate a fraction containing 75 per cent. higher alcohols, 15 per cent. methanol, and 10 per cent. water. This fraction is treated with a salting out solution, e.g., brine, and a higher alcohol layer is obtained containing only 3 per cent. methanol and 3 per cent. water. This mixture is distilled to obtain the anhydrous higher alcohols. The first distillate containing water and methanol is returned to the brine extractor.

NOTE.—Abstracts of the following specifications which are now accepted appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—284,224 (F. J. M. Hansen), relating to production of liquid hydrocarbons, etc., see Vol. XVIII, p. 305; 284,242 (I.G. Farbenindustrie Akt.-Ges.), relating to nitrogen derivatives of the anthraquinone series, see Vol. XVIII, p. 305; 284,247 (I.G. Farbenindustrie Akt.-Ges.), relating to insoluble azo dyestuffs, see Vol. XVIII, p. 305; 284,991 (Vereinigte Stahlwerke Akt.-Ges.), relating to obtaining iron from ores, see Vol. XVIII, p. 39 (Metallurgical Section); 284,976 (A. A. Frey), relating to iron and alloys, see Vol. XVIII, p. 39 (Metallurgical Section); 285,095 (Consortium für Elektro-Chemische Industrie Ges.), relating to esters of vinyl alcohol, see Vol. XVIII, p. 348; 285,504 (I.G. Farbenindustrie Akt.-Ges.), relating to dyestuffs, see Vol. XVIII, p. 369; 286,291 (Compagnie Nationale de Matières Colorantes et Manufacture de Produits Chimiques du Nord Réunies Etablissements Kuhlmann), relating to hydrogen, carbon monoxide, and nitrogen from coke-oven gas, see Vol. XVIII, p. 440; 293,863 (Schering Kahlbaum Akt.-Ges.), relating to 3-methyl-6-isopropylphenol, see Vol. XIX, p. 267; 294,550 (I.G. Farbenindustrie Akt.-Ges.), relating to condensation products of the anthraquinone series, see Vol. XIX, p. 297; 294,655 (H. Bardt), relating to halogens and precious metals from sea water, see Vol. XIX, p. 323; 300,249 (Barber Asphalt Co.), relating to an alloy, see Vol. XX, p. 15 (Metallurgical Section).

International Specifications not yet Accepted

308,598-9. PHOSPHORIC ACID AND HYDROGEN. Bayerische Stickstoff-werke Akt.-Ges., 4, Schadowstrasse, Berlin. International Convention date, March 24, 1928.

308,598. Phosphorus and water are heated to temperatures below 600° C. and pressures up to 600 atmospheres, in a closed vessel. Catalysts may be present, and the vessel may be of silver monel metal or lined with silver-plated copper, the copper being partly exposed so that copper phosphide is formed and acts as a catalyst. Phosphoric acid and hydrogen are obtained.

308,599. This is an addition to 308,598. The reaction is stopped at an intermediate stage, when phosphorous acid and phosphoretted hydrogen are formed. These are treated under different conditions of temperature and pressure to obtain phosphoric acid and hydrogen.

308,617 and 308,651. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, March 23, 1928.

308,617. A halogen dibenzpyrene-quinone is treated with a nitrogen compound containing at least one reactive hydrogen atom linked to the nitrogen atom, in the presence of a solvent such as nitrobenzene, o-cresol, naphthalene, or quinoline, an acid binding agent such as sodium carbonate or acetate, and a copper catalyst such as copper powder, oxide, chloride, or acetate. As an example, monobrom-4:5:8:9-dibenzpyrene-3:10-quinone is heated with α -aminoanthraquinone, sodium and copper acetates, and nitrobenzene. The product gives

red shades on cotton. The tints may be changed by treating with acid condensing agents.

308,651. Benzanthrone-*peri*-dicarboxylic acid or anhydride, or a derivative or substitution product, is condensed with an aromatic *o*-diamine or a salt in the presence or absence of an organic solvent such as nitrobenzene or quinoline. An acid binding agent is added if salts are employed instead of the free bases. Examples are given of the vat dyes obtained.

308,662. ALKYLPHENOLS AND PHENOL ETHERS. Schering-Kahlbaum Akt.-Ges., 170, Mullerstrasse, Berlin. International Convention date, March 23, 1928.

Phenols or their derivatives are heated above 100° C. with unsaturated hydrocarbons, such as ethylene, propylene or butylene, or cyclohexane. Phenol ethers are first obtained, and on further heating alkyl phenols are obtained. Examples are given of the treatment of phenol with propylene, coke oven gas, etc.

308,666. CARBOXYLIC ACIDS AND THEIR DERIVATIVES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, March 23, 1928.

To obtain carboxylic acids and their derivatives, the corresponding compounds with one carbon atom less are passed with carbon monoxide over phosphoric acid, alkali phosphates, boric acid, boric anhydride, or alkali borate. Thus, methyl chloride and carbon monoxide passed over sodium metaphosphate on pumice yield acetyl chloride.

308,681. THYMOL. Rheinische Kampfer-Fabrik Ges., Oberkassel, Düsseldorf, Germany. International Convention date, March 26, 1928. Addition to 298,600. (See THE CHEMICAL AGE, Vol. XIX, p. 565.)

Propyl or isopropyl derivatives of *m*-cresol are isomerised at 330°-400° C. without the use of catalysts, and the product fractionally distilled to obtain thymol. Alternatively, thymol can be obtained by the reaction between *m*-cresol and multipropylated *m*-cresol without catalysts and at higher temperatures. Examples are given.

308,684. PHOSPHATES AND HYDROGEN. Bayerische Stickstoff-werke Akt.-Ges., 4, Schadowstrasse, Berlin. (Assignees of N. Caro, 97, Hohenzollerndamm, Dahlem, Berlin, and A. R. Frank, 138, Kurfurstendamm, Halensee, Berlin.) International Convention date, March 26, 1928.

Phosphorus and water are heated under pressure to 600° C. in the presence of ammonia, alkalies, alkaline earths, bases, metals, or salts. Catalysts such as silver, phosphides, phosphates, etc., may be present. Phosphates and hydrogen are obtained, and the phosphate solution may solidify on spraying from the reaction chamber.

LATEST NOTIFICATIONS.

311,372. Manufacture and production of agents for use in vulcanising rubber and similar materials. I.G. Farbenindustrie Akt.-Ges. May 10, 1928.

311,226. Production of alkali sulphates. Chemieverfahren-Ges. May 7, 1928.

311,271. Process for the production of high-percentage manganese dioxide. I.G. Farbenindustrie Akt.-Ges. May 8, 1928.

311,400. Manufacture of azo-dyestuffs dyeing blue to black tints. I.G. Farbenindustrie Akt.-Ges. May 11, 1928.

311,272. Process for improving the efficiency of depolarising compositions comprising manganese dioxide and graphite. I.G. Farbenindustrie Akt.-Ges. May 8, 1928.

311,401. Electric accumulators. I.G. Farbenindustrie Akt.-Ges. May 12, 1928.

311,231. Process for preparing compounds of alkaline earth nitrates with methyl xanthines. Kaufmann, Dr. H. P. May 7, 1928.

311,376. Manufacture of ammonia. Urbain, E. May 10, 1928.

311,235. Grain immunising media. I.G. Farbenindustrie Akt.-Ges. May 7, 1928.

311,236. Process for the manufacture of aralkyl esters of the hydrocarboxylic fatty acids. I.G. Farbenindustrie Akt.-Ges. May 7, 1928.

311,283. Process for the manufacture of dianthraquinonylamines of the anthraquinone acridone series. I.G. Farbenindustrie Akt.-Ges. May 8, 1928.

311,336. Process for the manufacture of isatoic acid anhydride and derivatives thereof. I.G. Farbenindustrie Akt.-Ges. May 9, 1928.

311,285. Process of refining liquid hydrocarbons. Silica Gel Corporation. May 8, 1928.

311,287. Spools for textile industries. I.G. Farbenindustrie Akt.-Ges. May 8, 1928.

311,345. Destruction of insects. I.G. Farbenindustrie Akt.-Ges. May 9, 1928.

311,347. Process for the manufacture of vat dyestuffs of the anthranthrone series. I.G. Farbenindustrie Akt.-Ges. May 9, 1928.

311,381. Process for the coagulation of latex-like emulsions of artificial rubber. I.G. Farbenindustrie Akt.-Ges. May 10, 1928.

311,384. Manufacture of cotton dyestuffs. Soc. of Chemical Industry in Basle. May 10, 1928.

311,385. Manufacture of dyestuffs. Soc. of Chemical Industry in Basle. May 10, 1928.

311,661. Manufacture of intermediate products of the benzanthrone series, and dyestuffs therefrom. Soc. of Chemical Industry in Basle. May 12, 1928.

311,725. Process for the treatment of thiocyanates. Hansen, Dr. C. J. May 15, 1928.

311,697. Process of alkylating cellulose. Du Pont de Nemours and Co., E. I. May 14, 1928.

312,043. Catalytic process. Du Pont de Nemours and Co., E. I. May 18, 1928.

312,044. Catalytic process. Du Pont de Nemours and Co., E. I. May 18, 1928.

312,046. Manufacture of concentrated acetic acid. Distilleries des Deux-Sevres. May 19, 1928.

311,700. Coating-compositions containing metastyrene combined with softeners. Du Pont de Nemours and Co., E. I. May 14, 1928.

312,049. Coating-compositions. Du Pont de Nemours and Co., E. I. May 18, 1928.

312,050. Production of hydrocarbons of high boiling-point range from coal, shale, and other bituminous substances. I. G. Farbenindustrie Akt.-Ges. May 18, 1928.

312,052. Coating-compositions containing betaleostearin. Du Pont de Nemours and Co., E. I. May 18, 1928.

312,060. Manufacture of ammonia. Urbain, E. May 18, 1928.

312,061. Non-caking pigmented coating-compositions, and processes of making same. Du Pont de Nemours and Co., E. I. May 18, 1928.

311,735. Process of vulcanising rubber. I. G. Farbenindustrie Akt.-Ges. May 15, 1928.

311,708. Process for the manufacture of monoazo dyestuffs. I. G. Farbenindustrie Akt.-Ges. May 14, 1928.

312,069. Process for accelerating the vulcanisation of natural or artificial varieties of rubber. I. G. Farbenindustrie Akt.-Ges. May 18, 1928.

311,737. Manufacture of hydrogen. Lazote, Inc. May 15, 1928.

311,740. Process of reserving dyestuffs. I. G. Farbenindustrie Akt.-Ges. May 15, 1928.

311,741. Ornamentation of textile fabrics or the like. I. G. Farbenindustrie Akt.-Ges. May 16, 1928.

311,779. Printing with aniline black or the like. I. G. Farbenindustrie Akt.-Ges. May 16, 1928.

311,823. Process for the manufacture of disazo dyestuffs. I. G. Farbenindustrie Akt.-Ges. February 28, 1927.

Specifications Accepted with Date of Application

283,200. Carbon containing iron and steel, Process of annealing Vereinigte Stahlwerke Akt.-Ges. January 8, 1927.

284,998. 2 : 3-aminonaphthoic acid, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 7, 1927.

285,090. Dehydrating vapour mixtures containing acetic anhydride, Process for. I.G. Farbenindustrie Akt.-Ges. February 11, 1927.

285,096. Dyestuffs. Soc. of Chemical Industry in Basle. February 12, 1927.

285,097. Mordant dyeing dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 11, 1927.

288,985. Benzanthrone *peri*-dicarboxylic acid or its derivatives or substitution products, Manufacture of. O. Y. Imray. (I.G. Farbenindustrie Akt.-Ges.) April 16, 1928.

299,300. Volatilisable metals from iron-containing materials, Processes for the recovery of. F. Krupp, Grusonwerk Akt.-Ges. October 22, 1927.

297,667. Maleic acid and maleic anhydride, Manufacture of. A. Boehringer. September 24, 1927. Addition to 285,426.

311,193. Gaseous and liquid products, Separation of. C. F. R. Harrison and Imperial Chemical Industries, Ltd. December 31, 1927.

311,194. Intermediates and azo-dyestuffs derived therefrom, Manufacture of. O. Y. Imray. (I.G. Farbenindustrie Akt.-Ges.) January 4, 1928.

311,197-8. Destructive hydrogenation of carbonaceous materials. H. G. Watts, and Imperial Chemical Industries, Ltd. January 28 and 30, 1928.

311,208. Cyclic compounds containing aldehydic groups, Process for the manufacture of. A. Carpmal. (I.G. Farbenindustrie Akt.-Ges.) February 6, 1928.

311,251. Liquid hydrocarbons, Manufacture of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) December 5, 1927.

- 311,256. Iron and steel alloys. T. R. Haglund. February 7, 1928.
- 311,299. Hydrogen and gases containing hydrogen, Production of. K. Gordon and Imperial Chemical Industries, Ltd. January 31, 1928.
- 311,349. Aryl-azo-diamino-pyridines, Method of preparing. A. K. Croad. (*Pyridium Corporation*.) November 10, 1927.
- 311,352. Effecting chemical reactions in gases by means of electrical discharges, Process and apparatus for. P. H. Hull and Imperial Chemical Industries, Ltd. January 10, 1928.
- 311,465. Benzoic acid derivatives, Production of. H. W. Hereward, L. J. Hooley, J. Thomas, and Scottish Dyes, Ltd. February 16, 1928.
- 311,468. Purification of alcohols obtained by the catalysed interaction of oxides of hydrogen and carbon, Process for. A. Carpmæl. (*I.G. Farbenindustrie Akt.-Ges.*) February 16, 1928.
- 311,553. Nitric acid, Production of. C. C. Smith and Imperial Chemical Industries, Ltd. May 10, 1928.
- 311,588. Molybdenum irons or steels, Hardening of. J. L. F. Vogel. July 4, 1928.
- Applications for Patents**
- Barnes, R. S. Dyestuffs. 16,194. May 25.
- Bataafsche Petroleum Maatschappij and Elkington, H. D. Manufacture of alcohols. 16,003. May 23.
- Brightman, R., and Imperial Chemical Industries, Ltd. Azo dyes. 15,391. May 16.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of fast sulphur dyestuffs. 14,946, 14,947. May 13.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Vulcanisation of rubber. 15,101. May 14.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Protecting wool, etc., from moth, etc. 15,227, 15,228. May 15.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of chromium compounds of azo dyestuffs. 15,411. May 16.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of varnishes, etc. 15,412. May 16.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Treating roads, etc. 15,413. May 16.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of derivatives of organic mercury compounds containing nitrogen. 15,500. May 17.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of condensation products from aliphatic aldehydes, etc. 16,116. May 24.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Immunizing grain, etc. 16,117. May 24.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Etherification of carbohydrates. 16,118. May 24.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of chlorine, etc., derivatives of acetylene compounds. 16,186. May 25.
- Cosway, H. C., and Imperial Chemical Industries, Ltd. Concentration of aqueous acetic, etc., acid. 15,536. May 17.
- Craig, T. J. I., and Spence and Sons, Ltd., P. Production, etc., of compounds of fatty acids. 15,670. May 21.
- Fairweather, D. A. W., and Scottish Dyes, Ltd. Dyestuffs. 16,195. May 25.
- Geigy, Akt.-Ges., J. R. Manufacture of dyestuffs. 16,093. May 24. (Germany, May 24, 1928.)
- Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Process of producing white and coloured discharges. 15,854. May 22.
- Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Electric accumulators. 15,855. May 22.
- Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Producing azo-dyestuffs on the fibre. 15,978. May 23.
- Hoffmann-La Roche and Co., Akt.-Ges., F. Manufacture of O-O-diacetyl-diphenolisatine. 15,477. May 17. (Germany, June 29, 1928.)
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Incorporation of lampblack into rubber, etc. 14,884. May 13.
- I.G. Farbenindustrie Akt.-Ges., and Jackson, L. Melhorsh-. Apparatus for depulping fibre-containing foliated plants. 14,920. May 13.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of fast sulphur dyestuffs. 14,946, 14,947. May 13.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Separation of unsaturated hydrocarbons from gaseous mixtures. 15,056. May 14.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of condensation products from diolefines. 15,057. May 14.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Apparatus for manufacture of fuel gases. 15,058. May 14.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of artificial masses. 15,059. May 14.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Vulcanisation of rubber. 15,101. May 14.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Measurement of intensities of radiation. 15,199. May 15.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Working up distillable carbonaceous liquids. 15,200. May 15.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of polymerisation products of diolefines. 15,356, 15,357. May 16.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of conversion products of rubber. 15,496. May 17. (August 17, 1928.)
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Solutions of organic materials. 15,497. May 17.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Apparatus for treatment of carbonaceous materials. 15,498. May 17.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of acetone-soluble cellulose acetates. 14,945. May 13. (Germany, May 22, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Separation of solid constituents from oils. 15,060. May 14.
- I.G. Farbenindustrie Akt.-Ges. Treatment of textiles, etc. 15,103. May 14. (Germany, May 21, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of valuable hydrocarbons. 15,198. May 15. (Germany, June 7, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Reserving dyestuffs. 15,210. May 15. (Germany, May 15, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Ornamentation of textile fabrics, etc. 15,212. May 15. (Germany, May 15, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Printing with aniline black, etc. 15,368. May 16. (Germany, May 16, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of diazo dyestuffs. 15,501. May 17. (Germany, February 28, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Precipitation of heavy metal compounds from ammoniacal solutions. 15,638. May 18. (Germany, June 5, 1928.)
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of prints on smooth hard sheet metals. 15,852. May 22.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of halogen substitution products of the dibenzanthrone, etc., series. 15,853. May 22.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Polymerization of diolefines. 15,962. May 23.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of ethylene. 16,086. May 24.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Polymerization of diolefines. 16,163, 16,164. May 25.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Removal of mists of oil from gases. 16,165. May 25.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of chlorine, etc., derivatives of acetylene compounds. 16,186. May 25.
- I.G. Farbenindustrie Akt.-Ges. Electric connecting-device for cinematograph projectors. 15,733. May 21.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of glacial acetic acid from dilute acetic acids. 15,734. May 21. (Germany, May 18, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of acid wool dyestuffs. 15,736. May 21. (Germany, May 18, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of compounds containing active oxygen. 15,986. May 23. (Germany, June 7, 1928.)
- Imperial Chemical Industries, Ltd. Purification of gases. 15,149. May 15.
- Imperial Chemical Industries, Ltd. Manufacture of celluloid, etc. 15,237. May 15.
- Imperial Chemical Industries, Ltd., and McAulay, J. Methods of absorbing hydrogen cyanide from gases. 15,257. May 16.
- Imperial Chemical Industries, Ltd. Separating aluminium chloride from other chlorides. 15,538. May 17.
- Imperial Chemical Industries, Ltd. Removal of acetylene from gases. 16,041. May 24.
- Jost, F. Production of alkali nitrates. 15,603. May 18. (Germany, May 21, 1928.)
- Maclaurin, R. Recovering dye bodies from ammoniacal liquors. 15,473. May 17.
- Naamlooze Vennootschap Chemische Fabriek Servo and Rogenbrock, M. D. Sulphonating fatty acids, etc. 15,991. May 23. (Holland, May 23, 1928.)
- Riedel-E. de Haën Akt.-Ges., J. D. Manufacture of aromatic oxyaldehydes. 15,618. May 18.
- Rudolfo, E. Manufacture of salts of magnesium. 15,780. May 21.
- Scottish Dyes, Ltd., Willmott, S. G., Smith, W., and Thomas, J. Dyestuffs. 14,924, 14,925. May 13.
- Scottish Dyes, Ltd., and Thomas, J. Dyestuffs. 15,238. May 15. (Nov. 18, 1927.)
- Scottish Dyes, Ltd., and Wylam, B. Cellulose derivatives, etc. 15,996. May 23.
- Scottish Dyes, Ltd., and Wylam, B. Dyestuffs. 16,194, 16,195, 16,196. May 25.
- Soc. of Chemical Industry in Basle. Manufacture of condensation products from methylene bases of cyclic ammonium salts. 15,735. May 21. (Switzerland, May 19, 1928.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.
 ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.
 ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
 BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2 cwt. bags carriage paid any station in Great Britain.)
 CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall. pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE.—4½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex-wharf, London, in cwt. kegs.
 SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
 SODIUM BICHROMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.
 SODIUM CHLORATE.—2½d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 6¾d. per lb. Crude 60's, 2s. per gall.
 ACID CRESYLIC 99/100.—2s. 3d. to 2s. 9d. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Pale, 95%, 1s. 10d. to 1s. 11d. per gall. Dark, 1s. 7½d. to 1s. 8½d.
 ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.
 ANTHRACENE OIL, STRAINED, 1080/1090.—5½d. to 6d. per gall. 1100, 6d. to 6½d. per gall.; 1110, 6½d. per gall. Unstrained, 6½d. to 7d. per gall.
 BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.
 TOLUOLE.—90%, 1s. 7½d. to 2s. per gall. Firm. Pure, 2s. to 2s. 2d. per gall.
 XYLOL.—1s. 5d. to 2s. per gall. Pure, 1s. 8d. to 1s. 9d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 7½d. to 7¾d. per gall.; Heavy, 6½d. to 6¾d. per gall. Middle oil, 4½d. to 5d. per gall. Standard specification, 3½d. to 4½d. per gall. Light gravity, 2½d. to 2¾d. per gall. ex works. Salty, 7½d. per gall.
 NAPHTHA.—Crude, 8½d. to 9d. per gall. Solvent, 90/160, 1s. 3½d. to 1s. 4d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 8d. per gall. Solvent 90/190, 1s. 1d. to 1s. 4d. per gall.
 NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.
 NAPHTHALENE.—Crystals, £12 5s. to £14 10s. per ton. Quiet Flaked, £14 to £15 per ton, according to districts.
 PITCH.—Medium soft, 32s. 6d. to 35s. per ton, f.o.b., according to district. Nominal.
 PYRIDINE.—90/140, 4s. to 4s. 6d. per gall. 90/160, 3s. 9d. to 4s. per gall. 90/180, 2s. to 3s. per gall. Heavy, 1s. 6d. to 1s. 9d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. per lb. 100%.
 ACID BENZOIC.—1s. 8½d. per lb.
 ACID GAMMA.—4s. 6d. per lb.
 ACID H.—3s. per lb.
 ACID NAPHTHIONIC.—1s. 6d. per lb.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb.
 ACID SULPHANILIC.—8½d. per lb.
 ANILINE OIL.—8d. per lb. naked at works.
 ANILINE SALTS.—8d. per lb. naked at works.
 BENZALDEHYDE.—2s. 3d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 BENZOIC ACID.—1s. 8½d. per lb.
 o-CRESOL 29/31° C.—5½d. per lb.
 m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.
 p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.
 DICHLORANILINE.—1s. 10d. per lb.
 DIMETHYLANILINE.—1s. 11d. per lb.
 DINITROBENZENE.—8d. per lb. naked at works. £75 per ton.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 7½d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
 DIPHENYLAMINE.—2s. 10d. per lb. d/d.
 a-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—10d. per lb. d/d.
 a-NAPHTHYLAMINE.—1s. 3d. per lb.
 B-NAPHTHYLAMINE.—3s. per lb.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. per lb. d/d.
 p-NITRANILINE.—1s. 8d. per lb.
 NITROBENZENE.—6d. per lb. naked at works.
 NITRONAPHTHALENE.—1s. 3d. per lb.
 R. SALT.—2s. 2d. per lb.
 SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.
 o-TOLUIDINE.—8d. per lb.
 p-TOLUIDINE.—1s. 9d. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.
 N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.
 ACETONE.—£78 per ton.
 CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.
 IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw. 10d. per gall. 16° Tw. 9d. per gall.
 RED LIQUOR.—9d. to 10½d. per gall. 16° Tw.
 WOOD CRESOTE.—1s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d. per gall. Solvent, 4s. to 4s. 3d. per gall.
 WOOD TAR.—£3 10s. to £4 10s. per ton.
 BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.
 BARYTES.—£5 10s. to £7 per ton, according to quality.
 CADMIUM SULPHIDE.—5s. to 6s. per lb.
 CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£45 to £54 per ton, according to quantity, drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—4½d. to 5½d. per lb.
 LAMP BLACK.—£32 10s. per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPONE, 30%.—£23 per ton.
 MINERAL RUBBER "RUBPRON".—£13 12s. 6d. per ton, f.o.r. London.
 SULPHUR.—£10 to £12 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
 SULPHUR PRECIP. B. P.—£55 to £60 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.
 THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—6s. 10d. to 7s. per lb.
 ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.
 ACID, ACETYL SALICYLIC.—2s. 6d. to 2s. 8d. per lb.
 ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity.
 Solely ex Gum, 1s. 3d. to 1s. 4d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—2s. 1d. to 2s. 2d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 7d. per lb. Technical.—10½d. to 11½d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 4½d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—7s. 9d. to 8s. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimed, 1s. per lb.

ATROPHINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.

BISMUTH CARBONATE.—9s. 9d. per lb.

BISMUTH CITRATE.—9s. 3d. per lb.

BISMUTH SALICYLATE.—8s. 9d. per lb.

BISMUTH SUBNITRATE.—8s. 3d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 9d. per lb.

BISMUTH OXIDE.—12s. 3d. per lb.

BISMUTH SUBCHLORIDE.—10s. 9d. per lb.

BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTH ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb.

BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Ammonium, 2s. 2½d. per lb.; potassium, 1s. 11½d. per lb.; granular, 1s. 10½d. per lb.; sodium, 2s. 1½d. per lb.

CALCIUM LACTATE.—B.P., 1s. 2½d. to 1s. 3½d. per lb.

CAMPOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. 730—11d. to 1s. per lb., according to quantity other gravities at proportionate prices.

FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.

GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchester, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8½d. per lb.; sodium, 2s. 7½d. per lb., in 1 cwt. lots, assorted.

IRON AMMONIUM CITRATE.—B.P., 2s. 9d. per lb. Green, 3s. 1d. per lb. Prices for 1 cwt. lots. U.S.P., 2s. 9d. to 3s. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8½d. to 9½d. per oz., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 22s. per lb. net; Synthetic, 11s. to 12s. 6d. per lb.; Synthetic detached crystals, 11s. to 16s. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimed, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 5d. to 1s. 8d. per lb.

METHYL SULPHONAL.—18s. 6d. to 20s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—2s. 6d. to 2s. 9d. per lb.

PHENAZONE.—3s. 11d. to 4s. 2d. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—96s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 7d. per lb. in 1 cwt. lots.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—47s. per lb.; in quantity lower.

SALOL.—2s. 3d. to 2s. 6d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911.—2s. 4d. per lb., B.P.C. 1923—2s. 7d. per lb. Prices for 1 cwt. lots. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.

SODIUM FERROCYNIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—100s. to 105s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 2s. 2d. to 2s. 5d. per lb. Crystal, 2s. 3d. to 2s. 6d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—9s. 6d. to 10s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.

THYMOL.—Puriss., 9s. 1d. to 9s. 4d. per lb., according to quantity.

Firmer. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—11s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—5s. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 10d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—14s. per lb.

COUMARIN.—9s. per lb.

CITRONELLOL.—10s. per lb.

CITRAL.—8s. 3d. per lb.

ETHYL CINNAMATE.—6s. 6d. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—12s. 6d. per lb.

GERANIOL (PALMAROSA).—22s. per lb.

GERANIOL.—6s. 6d. to 10s. per lb.

HELIOTROPINE.—6s. per lb.

ISO EUGENOL.—14s. 3d. per lb.

LINALOL.—Ex Bois de Rose, 12s. 6d. per lb. Ex Shui Oil, 10s. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 16s. per lb. Ex Shui Oil, 12s. per lb.

METHYL ANTHRANILATE.—8s. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—34s. per lb.

MUSK XYLOL.—7s. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—10s. per lb.

RHODINOL.—52s. per lb.

SAFROL.—2s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN, EX CLOVE OIL.—18s. per lb. Ex Guaiacol, 15s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.

ANISE OIL.—3s. per lb.

BERGAMOT OIL.—21s. 6d. per lb.

BOURBON GERANIUM OIL.—21s. per lb.

CAMPOR OIL (White).—1s. 1d. per lb.

CANANGA OIL, JAVA.—12s. per lb.

CASSIA OIL, 80/85%.—6s. 3d. per lb.

CINNAMON OIL LEAF.—9s. per oz.

CITRONELLA OIL.—Java, 2s. 6d. per lb., c.i.f. U.K. port. Ceylon, pure, 2s. 4d. per lb.

CLOVE OIL (90/92%).—10s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 10½d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 17s. 6d. per lb.

LEMON OIL.—17s. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE OIL, SWEET.—25s. per lb.

OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.

PALMA ROSA OIL.—12s. 6d. per lb.

PEPPERMINT OIL.—English, 87s. 6d. per lb.; Wayne County, 14s. per lb.; Japanese, 7s. 6d. per lb.

PETITGRAIN.—8s. 6d. per lb.

SANDALWOOD.—Mysore, 28s. 6d. per lb.; 90/95%, 20s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, May 30, 1929.

BUSINESS has been somewhat restricted during the last few days, possibly owing to the approaching election and the usual Whitsuntide holidays in the North.

There are no changes of any special importance to report, prices being steady.

Export trade continues also along steady lines.

General Chemicals

ACETONE.—This product is in fair request, with supplies still inclined to be on the short side. Prices are firm at £75 to £85 per ton, according to quantity.

ACETIC ACID.—There is a steady regular demand, with prices unchanged at £36 10s. to £37 10s. for the 80% technical quality.

CITRIC ACID has been in better demand, with the price firm at 2s. 2d. to 2s. 3d. per lb., less 5%.

FORMIC ACID.—Trade has been somewhat slow, with the price unchanged at £42 per ton for 85% material.

LACTIC ACID.—A small trade is passing at £43 per ton, for 50%, by weight.

OXALIC ACID.—Quite a fair amount of business is passing, with prices firm at £30 10s. to £32 10s.

TARTARIC ACID.—The demand is increasing with prices firm at 1s. 4½d., less 5%.

ALUMINA SULPHATE.—An active demand is on the market, with supplies still on the short side, and near deliveries quoted at £7 15s. to £8 per ton.

ARSENIC.—A little better inquiry is being received, although there is no alteration in the price, which is about £16 5s. f.o.r. mines.

BARIUM CHLORIDE.—Business has been quite fair, both for near and for forward delivery. Makers are well occupied with orders and the price remains firm at about £11 10s. per ton.

CREAM OF TARTAR.—Somewhat higher prices are being quoted for best brands and the market is firm at about £98 per ton for 99/100%, B.P. quality.

COPPER SULPHATE.—Prices are being adjusted to conform with the lower market for the metal, and the product is now quoted at about £27 to £28 per ton, with a fairly satisfactory demand.

FORMALDEHYDE.—Business has been fair, and the price shows no change at £39 per ton.

LEAD ACETATE.—Trade is inclined to be slow, but there is no alteration in the price, which is about £44 for white, and £41 per ton less for brown.

LEAD NITRATE.—Demand has been better and the price is keeping firm at £34 per ton.

LIME ACETATE.—Unchanged at about £18 per ton.

LITHOPONE.—In steady demand at about £19 15s. to £22.

METHYL ACETONE.—The market is meeting with a fairly good demand and the price shows no change at £58 to £60 per ton.

POTASSIUM CHLORATE.—Steady at £28 to £30 per ton.

PERMANGANATE OF POTASH.—The demand is improving, and the product is quoted at about 5½d. per lb. for the best brands of B.P. quality.

PRUSSIAN OF POTASH.—There has been quite a satisfactory increase in the demand, and the market is firm at £63 10s. to £65 10s. per ton.

SODIUM ACETATE.—There is a fair demand for standard crystals at about £22 per ton, with supplies still rather short.

SODIUM BICHRONATE.—An active demand is being received with the market firm at 3½d., with small discounts for contracts.

SODIUM HYPOSULPHITE.—There is a good demand for photographic pea crystals at about £14 10s. to £15 per ton, with the commercial quality still inclined to be slow of sale.

SODIUM NITRITE.—The demand is improving, the market standing firm at £20 per ton.

SODIUM PHOSPHATE.—A small business is passing at about £12 per ton, for dibasic and £16 10s. for tribasic.

SODIUM PRUSSIAN.—Firm conditions still rule this product at about 4½d. to 5½d. per lb.

TARTAR Emetic.—Only in small request, at about 11½d. per lb.

ZINC SULPHATE.—Steady and in fair request at about £12 per ton.

Coal Tar Products

The coal tar product market remains quiet, and there is no change to report in the prices of benzol, naphtha, etc. Creosote oil, however, has suffered a further decline, and prices are as follows:—

MOTOR BENZOL remains unchanged at about 1s. 7d. to 1s. 7½d. per gallon, f.o.r. makers' works, for prompt delivery.

SOLVENT NAPHTHA is unchanged at 1s. 2½d. to 1s. 3d. per gallon, f.o.r.

HEAVY NAPHTHA is quoted at 1s. 2d. per gallon, f.o.r.

CREOSOTE OIL is quoted at 3½d. to 4d. per gallon in the North, and at 4½d. to 5d. per gallon in London.

CRESYLIC ACID remains at about 1s. 10d. per gallon for the 98/100% quality, and at about 1s. 8d. per gallon for the dark quality 95/97%.

NAPHTHALENES are unchanged, the firelighter quality being quoted at about £4 10s. per ton, the 74/76 quality at about £5 per ton and the 76/87 quality at £6 to £6 5s. per ton.

PITCH.—The forward market remains unchanged, at a nominal figure of 35s. to 37s. 6d. per ton, f.o.b. East Coast.

Nitrogen Products

Sulphate of Ammonia.—During the last week the price of sulphate of ammonia has declined to £9 5s.-£9 7s. 6d. per ton, f.o.b. U.K. port in single bags for neutral quality, basis 20.6 per cent. nitrogen. At the end of the consuming season there is normally a decline of this nature and the prices do not become stable until the large continental suppliers have fixed their prices scale for the year.

Home.—The home demand is declining rapidly. Prices remain unchanged until June 30.

Nitrate of Soda.—There is no change to report.

Latest Oil Prices

LONDON, May 29.—LINSEED OIL was quiet and 2s. 6d. per ton lower. Spot, ex mill, £28 15s.; June to August, £28 5s.; September-December, £28 7s. 6d.; and January-April, £28 15s., naked. RAPE OIL was neglected. Crude, extracted, £41; technical refined, £43, naked, ex wharf. COTTON OIL was quiet. Egyptian, crude, £27 10s.; refined common edible, £34; and deodorised, £36, naked, ex mill. TURPENTINE was dull and 9d. per cwt. lower to unchanged. American spot, 45s. 9d.; May-June, 44s. 3d.; and July-December, 42s. 6d.

HULL.—LINSEED OIL.—Spot and May and June-August, £28 7s. 6d. per ton, naked. COTTON OIL.—Bombay crude, spot, £26 5s.; Egyptian crude, spot, (new), and May and June-August, £26 15s.; edible refined, spot and May and June-August, £30 10s.; technical, spot, £30 5s.; deodorised, spot, £32 10s. per ton, naked. PALM KERNEL OIL.—Crushed, 5½ per cent., £31 10s. per ton, naked. GROUNDNUT OIL.—Crushed/extracted, £32 10s.; deodorised, £36 10s. per ton. SOYA OIL.—Extracted and crushed, £30 10s.; deodorised, £34 per ton. RAPE OIL.—Crushed/extracted, £40 10s.; refined, £42 10s. per ton. CASTOR OIL and COD OIL unchanged. TURPENTINE.—47s. 9d. per cwt., net cash terms, ex mill.

South Wales By-Products

SOUTH WALES by-product activities are unchanged. Conditions generally are unsatisfactory, but there are indications that an improved tone may be expected shortly. Pitch is a little brighter, with prices firmer, and makers appear reluctant to sell forward in the hope of better values later. Present quotations range from 32s. to 34s. per ton. Road tar has a better call round about 10s. 6d. to 13s. 6d. per 40-gallon barrel, but crude tar has a slow market at from 25s. to 29s. per ton. Refined tars continue fairly bright, with quotations unchanged for gasworks and coke oven tar. Creosote is inactive and on offer round about 4½d. to 5½d. per gallon. Crude naphthalene is quoted round 80s. per ton, but has scarcely any demand. A similar remark applies to whizzed round about 100s. per ton. Patent fuel and coke exports are better, but prices are unchanged. Patent fuel, ex-ship Cardiff, 21s. to 21s. 6d. per ton; ex-ship Swansea, 20s. per ton. Coke quotations are:—Best foundry, 32s. 6d. to 36s. 6d.; good foundry, 26s. 6d. to 32s., and furnace from 21s. to 23s. per ton. Oil imports over the last four ascertainable weeks amounted to 20, 150, 151 gallons.

Alleged Air Pollution at Billingham

MAJOR L. ROPNER, who was Conservative candidate for the Sedgfield Division, has raised the question of the alleged pollution of the atmosphere in the Billingham and Haverton Hill district, which is said to have resulted from the establishment of the Synthetic Ammonia works. Major Ropner wrote to the secretary of Imperial Chemical Industries, Ltd., and pointed out that, while the whole district was grateful to the company for having been the cause of greatly increased employment and having given work to many miners and others, efforts should be made to abate the smoke nuisance. The Hon. Henry Mond, to whose attention Major Ropner also brought the matter, thanked Major Ropner for the interest he was taking in it, and assured him that, as a result, every effort would be made by the company to minimise the trouble.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, May 29, 1929.

THERE has been a slight falling off in inquiry for heavy chemicals during the past week, this possibly being due to the approach of the general election. There are practically no changes in prices to record.

Industrial Chemicals

- ACETONE.—B.G.S. £76 10s. to £85 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.
- ACID ACETIC.—98/100% Glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports. 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.
- ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations. There are a few fairly cheap offers made from the Continent.
- ACID CARBOLIC ICE CRYSTALS.—Unchanged at 6½d. per lb., delivered or f.o.b. U.K. ports.
- ACID CITRIC B.P. CRYSTALS.—Quoted 2s. 2½d. per lb., less 5% ex store, spot delivery. Offered at 2s. 2½d. per lb., less 5% ex wharf, prompt shipment from the Continent.
- ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy; dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.
- ACID NITRIC 80° QUALITY.—£24 10s. per ton, ex station, full truck loads.
- ACID OXALIC 98/100%.—Price remains unchanged at about 3½d. per lb., ex store. Offered for prompt shipment from the Continent at 3½d. per lb., ex wharf.
- ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 168° quality. Dearsenicated quality, 20s. per ton extra.
- ACID TARTARIC B.P. CRYSTALS.—Spot material now quoted 1s. 4½d. per lb., less 5%, ex wharf.
- ALUMINA SULPHATE.—Spot material rather dearer at about £6 per ton, ex store. For prompt shipment, £5 15s. per ton, c.i.f. U.K. ports.
- ALUM LUMP POTASH.—Unchanged at about £8 12s. 6d. per ton, c.i.f. U.K. ports. Crystal meal offered on spot at £9 per ton, ex store.
- AMMONIA ANHYDROUS.—Quoted 7½d. per lb., carriage paid. Containers extra and returnable.
- AMMONIA CARBONATE.—Lump quality quoted £36 per ton; powdered, £38 per ton, packed in 5-cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.
- AMMONIA LIQUID 80°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.
- AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture, quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.
- ANTIMONY OXIDE.—Quoted £37 per ton, c.i.f. U.K. ports, prompt shipment from China. Spot material unchanged at about £40 per ton, ex store.
- ARSENIC, WHITE POWDERED.—Unchanged at £18 5s. per ton, ex wharf, prompt despatch from mines. Spot material quoted £19 15s. per ton, ex store.
- BARIUM CHLORIDE.—Quoted £10 10s. per ton, c.i.f. U.K. ports, prompt shipment.
- BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.
- CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 5s. per ton to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.
- COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports.
- FORMALDEHYDE, 40%.—Still in fairly good demand and price now quoted is £36 10s. per ton, ex store.
- GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 5s. per ton, ex wharf.
- LEAD, RED.—On offer at £29 15s. per ton, ex store.
- LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.
- LEAD ACETATE.—White crystals quoted £41 10s. per ton; brown on offer about £39 10s. per ton, ex store.
- MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.
- METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon, less 2½% delivered.
- POTASSIUM BICHROMATE.—Quoted 4½d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance of 2½% for minimum 2½ tons to be taken.
- POTASSIUM CARBONATE, 96/98%.—Spot material now quoted £26 10s. per ton, ex store. Offered from the continent £25 10s. per ton, c.i.f. U.K.
- POTASSIUM CHLORATE, 99½/100%.—Powder. Quoted £25 10s. per ton, ex wharf. Crystals 30s. per ton extra.
- POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.
- POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 5½d. per lb., ex wharf.
- POTASSIUM PRUSSIATE (YELLOW).—Offered for prompt shipment from the continent at 6½d. per lb., ex wharf. Spot material quoted 7d. per lb., ex store.
- SODA CAUSTIC.—POWDERED, 98/99%.—Now £17 10s. per ton in drums; £18 15s. per ton in casks. Solid 76/77% £14 10s. per ton in drums and 70/75% £14 2s. 6d. per ton in drums, all carriage paid buyers' stations, minimum four ton lots, for contracts 10s. per ton less.
- SODIUM ACETATE, 65%.—Crystal quality quoted about £19 15s. per ton, ex wharf; 73/78% anhydrous quality on offer at £20 per ton, carriage paid buyers' stations.
- SODIUM BICARBONATE.—Refined recrystallised £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.
- SODIUM BICHROMATE.—Manufacturers advise an advance in price of ½d. per lb., making the spot price now 3½d. per lb. delivered as from July 1, with special concession for contracts from 2½ tons up to 25 tons.
- SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality 27s. 6d. per ton extra. Light soda ash £7 1s. 3d. per ton, ex quay, minimum four-ton lots with various reductions for contracts.
- SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum four-ton lots. Prices for this year unchanged.
- SODIUM NITRATE.—Ordinary quality quoted £10 12s. per ton, carriage paid buyers' sidings, minimum six-ton lots, usual extras for small quantities and refined qualities.
- SODIUM PRUSSIATE.—Spot material quoted 7d. per lb. Offered for prompt shipment from the Continent at 6½d. per lb. c.i.f. U.K. ports.
- SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, 52s. 6d. per ton delivered for unground quality. Ground quality 2s. 6d. per ton extra.
- SODIUM SULPHIDE.—Prices for home consumption. Solid 60/62% £9 per ton. Broken 60/63% £10 per ton. Crystals 30/32% £7 2s. 6d. per ton, delivered buyers' works on contract, minimum four-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.
- SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £10 7s. 6d. per ton; ground American, £9 5s. per ton, ex store.
- ZINC CHLORIDE, 98%.—British material now quoted £22 10s. per ton f.o.b. U.K. ports.
- ZINC SULPHATE.—Offered from the Continent at about £10 5s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Progress in Canada's Chemical Industries

THE Dominion Bureau of Statistics at Ottawa has forwarded to the High Commissioner of Canada in London its final report on the manufacture of chemicals and allied products in Canada during the year 1927. Increased outputs and a slightly downward trend in prices are features of the 1927 statistics, the growing importance of the chemical industries in Canada being reflected in the gain shown in the apparent consumption of these products. In 1927, the consumption of chemical products is estimated to have reached a total value of nearly \$143,000,000, or more than \$5,000,000 in excess of the 1926 total. The report contains a general review of the industry dealing with capitalisation, employment, power equipment, production, imports and exports, and there are eleven chapters in which statistics of particular branches of the industry are shown, followed by a directory of manufacturers in each section. The report in question may be consulted at the Office of the High Commissioner, The Canadian Building, Trafalgar Square, London, S.W.1.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, May 30, 1929.

THE chemical market has made a satisfactory recovery after a week of pronounced inactivity due to the Whitsuntide holidays, and contract deliveries of many lines, which had been seriously interfered with, have been resumed. In the spot markets inquiry this week has been on a fair scale, and a moderate volume of business has been booked. With regard to prices, these continue steady in most sections of the market.

Heavy Chemicals

A quiet trade has been passing in saltcake, with current offers of this material ranging from £2 10s. to £2 15s. per ton, according to quantity. Alkali has been selling in fair quantities and values of this remain at £6 per ton in contract lots. Inquiry for sulphide of sodium has been rather slow, with the 60-65 per cent. concentrated solid at £9 per ton and the commercial grade at £7 15s. to £8. There has been a moderate call for phosphate of soda, values of which keep steady at about £11 15s. per ton. Caustic soda is very firm and meets with a quietly steady demand against contracts at from £12 15s. to £14 per ton, according to quality. Prussiate of soda has been moving in fair quantities and prices are well held at from 4½d. to 5d. per lb. A quiet trade has been put through in the case of hyposulphite of soda, and quotations in this section are steady at £15 10s. per ton for the photographic kind and about £9 per ton for the commercial. Bichromate of soda keeps firm at 3½d. per lb. and a moderate inquiry has been reported this week. Bicarbonate of soda is selling in satisfactory quantities and there has been no alteration in the price position, current contract offers of this being at about £10 10s. per ton. Chlorate of soda is a fairly steady section although there has been no great weight of business done in this material during the past week; to-day's quotations are in the neighbourhood of 2½d. per lb.

Among the potash products, caustic is firm at from £33 5s. per ton for prompt delivery of one to five-ton lots, and business is on moderate lines. Carbonate of potash is in fair request at £26 to £26 5s. per ton. Permanganate of potash has been quiet at about 5d. per lb. for the commercial grade and from 5½d. to 5¾d. per lb. for the B.P. Chlorate of potash is on the slow side but prices are maintained at from 3d. to 3½d. per lb., according to quantity. Bichromate of potash continues to be quoted here at round 4½d. per lb., and a fair demand has been reported. There has been some inquiry about for yellow prussiate of potash, offers of which range from 6¾d. to 7½d. per lb.

In some quarters a rather better demand has been experienced for arsenic, and values are steady at from £16 to £16 5s. per ton at the mines, for white powdered, Cornish makes. Sulphate of copper is attracting a moderate amount of attention, and quotations this week have been round £29 per ton. There has not been much going in the case of nitrate of lead, which is on offer at about £34 10s. per ton. Acetate of lead also has been on the quiet side at £40 10s. per ton for white and £39 to £39 10s. for brown. Acetate of lime meets with a fair inquiry and prices are steady at round £16 10s. per ton for the grey quality and £8 10s. for the brown.

Acids and Tar Products

Oxalic acid has been only in moderate request but values are well held at £1 11s. 6d. to £1 12s. per cwt., ex store. There has been a fair movement of tartaric acid at about 1s. 4½d. per lb., with citric acid in a somewhat similar position at 2s. 2d. per lb. With regard to acetic acid, buying interest in this material is fairly active and prices are firm at £36 10s. per ton for the 80 per cent. commercial grade and £67 for the glacial.

Pitch is quiet and nominal at about £1 15s. per ton, f.o.b., with creosote oil inactive at from 2½d. to 3d. per gallon, naked. Offers of crystal carbolic acid are being steadily taken up at 6¾d. per lb., and 60's crude is very firm at from 1s. 11d. to 2s. per gallon. Solvent naphtha is firm and in fair demand at about 1s. 3½d. per gallon.

Company News

NEWPORT CHEMICAL CO.—Net profits of \$355,930 (£71,186) for the first quarter of 1929 are reported by the Newport Co., the U.S. chemical manufacturing firm which specialises in the conversion of tree-stumps and other waste woods into chemical products. Net sales for the quarter amounted to \$2,591,106 (£518,221), compared with \$7,494,000 (£1,498,800) for the whole of 1928. The regular quarterly dividend of 75 cents per share has been declared on the convertible Class A stock of the company.

BURMAH OIL CO., LTD.—The report for the past year states that after charging income tax, contribution to employees' provident fund, directors' fees, etc., and writing off £381,735 2s. for depreciation, the profit is £1,479,626. There has been transferred to insurance reserve £20,000; general reserve £200,000, and fields expenditure equalisation reserve £150,000; leaving £1,109,626, to which must be added balance brought forward from 1927 £502,416, making a surplus of £1,612,042. The directors recommend a final dividend on the ordinary shares for 1928 of 2s. per share, less tax, at 2s. 6½d. per £ (being amount of British income tax, less relief in respect of Dominion income tax), carrying forward £151,084.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks, and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to June 22, 1929.

GLISKON.

501,354. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. I.G. Farbenindustrie Aktien-Gesellschaft (a joint stock company organised under the laws of Germany), Mainzer Landstrasse 28, Frankfurt-on-Main, Germany; manufacturers. March 27, 1929. To be associated with No. 501,353 (not yet advertised).

REGENSEL.

501,813. Class 1. Chemical substances used in manufactures. The Salt Union, Ltd., Colonial House, Water Street, Liverpool; salt manufacturers. April 15, 1929.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CAUSTIC SODA.—The Director-General, India Store Department, Belvedere Road, Lambeth, London, S.E.1, invites tenders for 20 tons of caustic soda (sample required with tender). Tenders due June 11, 1929. Forms of tender available from the above at a fee of 5s.

Bradford Dyers' Association Merger Rumours

It is rumoured that the Bradford Dyers' Association is in negotiation with a number of concerns in the dyeing and finishing trade of Huddersfield with a view to a merger. The negotiations, it is stated, have proceeded to the extent that valuations are being taken of the various concerns, which number about twenty, and cover the greater part of the section of the trade devoted to the dyeing and finishing of men's clothes. Hitherto the operations of the Association have been practically confined to dress goods, so far as its West Riding activities are concerned, although for some years past it has been closely associated with the Huddersfield dyers in matters of common concern. The Bradford Dyers' Association was formed in 1898 to amalgamate a number of businesses engaged in the Bradford piece dyeing trade. The authorised capital is £6,000,000, of which £4,670,363 is issued in 2,500,000 preference and 2,170,363 ordinary shares of £1. There are also debentures for £1,453,750.



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For Extinguishing Fires

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

STANSFIELD, J., Mr., Boothfold, Waterfoot, chemical manufacturer. (C.C., 1/6/29.) £17 16s. 2d. April 24.

WREN, Thomas Duncan, Maycroft, Weedon Road, Northampton, polish manufacturer. (C.C., 1/6/29.) £13 15s. 4d. April 22.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

HOLDEN (ARTHUR) AND SONS, LTD., Birmingham, paint manufacturers. (M., 1/6/29.) Registered May 13, £100 debentures, part of £20,000; general charge. *£8,600. June 28, 1928.

Satisfaction

ANGLO-BOSPHORUS OIL CO., LTD., Bristol. (M.S., 1/6/29.) Satisfaction registered May 13, £1,000, registered July 12, 1906.

London Gazette, &c.

Order Made on Application for Discharge

SMITH, Wilfrid Cecil, described in the Receiving Order as Wilfred Smith, 5, Byron Road, Ealing Common, Middlesex, and 37, Great Tower Street, London, E.C., chemical merchant and agent. (O.M.A.D., 1/6/29.) Discharge suspended for three months until July 23.

Companies Winding Up Voluntarily

THOMPSON (W.) LTD. (C.W.U.V., 1/6/29.) By Special Resolutions April 12th, confirmed May 6th. "That this company be amalgamated with Wright Bros. (Sunderland) Limited, and that such amalgamation be effected by means of the formation of a new Company with the object (*inter alia*) of acquiring the undertakings and assets of this Company and Wright Bros. (Sunderland) Limited." J. S. Sims, 28, John Street, Sunderland, Chartered Accountant, appointed as liquidator.

WRIGHT BROS. (SUNDERLAND) LTD. (C.W.U.V., 1/6/29.) By Special Resolutions, April 12th, confirmed May 6th: "That this Company be amalgamated with W. Thompson, Limited." J. S. Sims, 28, John Street, Sunderland, Chartered Accountant, appointed as liquidator.

Partnership Dissolved

The firm of J. PATTISON AND CO., chemical merchants and manufacturers, 203, Carntyne Road, Glasgow, of which the subscribers were the only partners, was dissolved, by mutual consent, at March 31, 1929, by the retiral therefrom of the subscriber James Pattison. The subscriber A. M. Pattison will continue the business under the present firm name of J. Pattison and Co., at the same address, and is authorised to collect the whole assets, and will discharge the whole liabilities, of the dissolved firm. JAMES PATTISON, A. M. PATTISON.

New Companies Registered

CHEMICAL CONCESSIONS (LONDON), LTD., 14, New Bridge Street, London, E.C.4. Registered May 25. Nom. capital £1,000 in 800 7½ per cent. participating preference

shares of 10s. each and 600 ordinary shares of £1 each. Manufacturers, producers and sellers of disinfectants dyes, acids, alkalis and all other such chemical and natural compounds and by-products capable of being used for disinfecting, sanitary, hygienic and all other purposes, etc.

PINE PRODUCTS SYNDICATE, LTD., 20, Eastcheap, London, E.C.3.—Registered May 5. Capital Nom. £10,500 in 10,000 ordinary shares of £1 each and 10,000 deferred shares of 1s. each. Extractors, producers, refiners, storers, suppliers and manufacturers of and dealers in resin and bituminous and other gums, etc. and to adopt an agreement with W. F. Hendrick. Directors: General Sir Hubert Gough, W. H. Cooke, C. F. Hendrick, E. F. Slade.

New Benn Books

THE new publications announced by Ernest Benn, Ltd., include the following:—

Italy. By Luigi Villari. (18s.) A survey of the evolution of political ideas in Italy from the fall of the Napoleonic Empire until the present day, edited by the Rt. Hon. H. A. L. Fisher.

The Pope is King. By Civis Romanus. (10s. 6d.) Sets out the history and solution of the reconciliation between the Papacy and the Kingdom of Italy and the re-establishment of the independent Vatican State.

Julius Cæsar. By Senator Corradini (translated by Helen Briggs). (8s. 6d.) A five-act drama dealing with the life of Cæsar by the intellectual head of the Fascist Party in Rome.

All Kneeling. By Anne Parrish. (7s. 6d.) A shrewd and amusing book which puts under the microscope the apparently spiritual, self-sacrificing, beautiful Christabel Caine.

The Ainceworth Mystery. By Gregory Baxter. (7s. 6d.) A first-class thriller, beginning with the disappearance of Perceval Ainceworth, British Air Minister.

A Short History of Repton. By Alec Macdonald. (12s. 6d.) An authoritative history of great interest to the general reader as well as to Reptonians past and present.

Automatic Weaving. By W. A. Hanton. (21s.) A full account of the latest and most successful types of automatic looms and a discussion of their relative advantages as compared with the ordinary loom and with one another.

The Life and Times of Machiavelli. By Professor Pasquali Villari. (15s.) A new edition, entirely reset, of Professor Villari's standard work.

La Vie Parisienne. By A. P. Herbert (3s. 6d., paper; 5s., cloth.) The libretto and lyrics written by Mr. Herbert for music by Offenbach, and described as "a really brilliant piece of work worthy of Gilbert at his best."

Guilds of Dublin. By John J. Webb, M.A., LL.D. (12s. 6d.) A valuable contribution not only to the history of Irish trade but to the history of the Guild System throughout the United Kingdom.

Inquiry Into Government Research Staffs

A COMMITTEE has been appointed by the Treasury to inquire into matters affecting the functions and staff of certain research and experimental establishments of Government departments. The committee's terms of reference are:—To examine the functions and organisation of the under-mentioned establishments in the Government service, and to report on the method of recruitment and conditions of service of the civilian scientific and technical officers employed therein: (a) The research and experimental establishments under the Admiralty, War Office, Air Ministry, and Department of Scientific and Industrial Research; (b) The Department of the Government chemist and the establishments under the Admiralty and War Office concerned with chemical analyses; and (c) the Meteorological Office. The members of the committee are Professor H. C. H. Carpenter (chairman), Sir W. J. Larke, Sir Robert Robertson (Government Chemist), Mr. F. M. Morris (Treasury), Mr. R. J. G. C. Paterson (War Office), Dr. F. E. Smith (Director of Scientific Research, Admiralty), Mr. H. T. Tizard (Department of Scientific and Industrial Research); and Mr. H. E. Wimperis (Director of Scientific Research, Air Ministry); with Mr. H. Brittain, of the Treasury, as secretary.

